bold letter "P", and large readable arrow pointing toward public parking facilities. It would be appropriate to post these signs at locations where motorists can be redirected from on-street parking areas to convenient off-street lots and structures. This would reduce the problem of business employees parking in on-street spaces intended for short-term customer, resident, and visitor parking.

8.5 Impacts of Parking Management Plan

Parking plans being considered for the Comprehensive Plan area may create parking management issues. Many measures can be taken to more carefully manage and regulate on street parking activity in desirable areas. Through careful and effective measures such as time limits and pay parking, anticipated on-street parking demand can be effectively managed.

9. Traffic Analysis Methodology

This chapter documents the methodologies and assumptions used to conduct the analysis for the proposed project. This section contains the following background information:

- Study timeframes
- Study area description
- Capacity analysis methodologies

9.1 Study Timeframes and Scenarios

This report presents an analysis of the intersection operating conditions during the morning and evening peak hours and the weekend peak hour for the following anticipated timeframes and scenarios:

- Existing Conditions (Year 2008)
- Buildout Year 2030 Without Project
- Buildout Year 2030 With Project

9.2 Project Study Area

The study area was determined through consultation with the City of Westminster Traffic Engineering Division and evaluation of traffic distribution derived from a regional travel forecasting model. The study area consists of the following intersections:

1. Newland Street at Hazard Avenue
2. Newland Street at Bolsa Avenue
3. Newland Street at McFadden Avenue
4. Magnolia Street at Hazard Avenue
5. Magnolia Street at Bolsa Avenue
6. Magnolia Street at Bishop Place
7. Magnolia Street at McFadden Avenue
8. Weststate Street at Bolsa Avenue
9. Weststate Street at Bishop Place
10. Asian Garden at Bolsa Avenue
11. Moran Street at Bolsa Avenue
12. Moran Street at Bishop Place
13. Bushard Street at Hazard Avenue
14. Bushard Street at Bolsa Avenue
15. Bushard Street at Bishop Place
16. Bushard Street at McFadden Avenue
17. Brookhurst Street at Hazard Avenue
18. Brookhurst at Bolsa Avenue

19. Brookhurst Street at Bishop Place
20. Brookhurst Street at McFadden Avenue
21. Asian Garden Mall Drive Aisle at Bishop Place [1]
22. Asian Garden Mall Drive Aisle at Plaza Way [1]
23. Moran Street at Plaza Way [1]
24. Magnolia Street at Trask Avenue

Note 1: Future Intersection

These intersections were selected for evaluation based on expected traffic distribution patterns from the project site to the surrounding street network. The initial distribution pattern was based on the OCTA OCTAM model and refined to local circulation patterns. Intersections selected for analysis are those most likely to experience significant traffic impacts from the proposed project based on these traffic distribution patterns.

9.3 Analysis Methodologies

9.3.1 HCM Methodology

This section presents a brief overview of traffic analysis methodologies and concepts used in this study. Traffic conditions on roadway facilities are analyzed using the principles or the specific analysis methods contained in the *Highway Capacity Manual*, 2000 Edition (*HCM*), a publication of the Transportation Research Board, a research agency affiliated with the Federal Government. Chapter 9 of the *HCM* is devoted to analysis of signalized intersections and Chapter 10 is devoted to the analysis of unsignalized intersections. The methodology in the *HCM* for signalized and unsignalized intersections is based upon measurements or forecasts of stopped delay for traffic utilizing all approaches to the intersection.

The HCM "operational analysis" procedure for signalized intersections uses 1,900 passenger cars per hour of green per lane (pcphgpl) as the maximum saturation flow of a single lane at an intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition, (i.e., percent of trucks) and shared lane movements (e.g., through and right-turn movements from the same lane). Level of service for signalized intersections is based on the average time (seconds) that vehicles passing through an intersection are delayed by the signal controls.

Unsignalized intersections were also analyzed using the HCM method. Traffic Performance for unsignalized intersections is also based upon control delay, however delay is only assessed for those traffic movements that are stopped or must yield to through traffic. Some movements, including cross traffic on the minor street or left turns onto the major street, can be subject to long delays, however through traffic and right turns from the major street will not experience any delays at stopped intersections. When delay for cross traffic is severe the intersection should be evaluated further for possible improvement with traffic signals. If the number of stopped vehicles is substantial traffic signals may be justified as a mitigation measure.

The HCM stop-control methodology often produces unrealistic results at locations where low volume streets intersect with a multilane street that have nearby traffic signals. Synchro software was utilized to generate a more plausible delay calculation for this condition. Synchro and its companion simulation software, SimTraffic, is better suited for this type of analysis because it accounts for signal timing at nearby intersections and gaps in the arriving traffic stream in its calculation of movement delay. The reported delays by SimTraffic are used to calculate an overall intersection delay for the critical AM and PM peak time periods at unsignalized intersections.

This study uses the HCM methodology for complex intersection analysis due to its ability to consider traffic signal coordination in its analysis of intersection delay.

9.3.2 ICU Methodology

Traffic conditions in Southern California are also often evaluated during peak hours at intersections using a methodology known as the Intersection Capacity Utilization (ICU) technique. This is the preferred analysis method for analyzing signalized intersections in the City of Westminster. This analysis method is widely accepted and essentially measures the amount of traffic signal "green" time required for the intersection. It provides a means of evaluating intersection performance based on the intersection capacity utilization, or volume/capacity (V/C) ratio of all intersection approaches. It is a significant variation from the HCM method; however it produces results that are generally similar.

The ICU calculation procedure is based on a critical movement methodology that shows the amount of capacity utilized by each critical movement at an intersection. A capacity of 1,700 vehicles per hour per lane is assumed together with a 5-second clearance interval, based upon the guidelines in the Orange County Congestion Management Plan (CMP). The City of Westminster generally requests that this method be used in the City, so all signalized intersections were analyzed based on this method. The ICU methodology for signalized intersections is consistent with the Orange County Congestion Management Plan (CMP).

9.3.3 Intersection Level of Service

Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service ranges from Level A (free flow, little congestion) to Level F (forced flow, extreme congestion). A more detailed description of the concepts described in this section is provided in Appendix D of this document.

All of the methodologies in the Highway Capacity Manual and the ICU method are based upon the concept of traffic "Level of Service". This concept is also fundamental to many other forms of traffic analysis. Brief definitions of level of service are described in Table 9.1. The relationships between Level of Service and Volume/Capacity criteria for signalized intersections, and delay for unsignalized intersections are shown in Table 9.2.

Table 9.1 - Level of Service Descriptions

Level of Service	Traffic Description
A	Excellent, Light Traffic
B	Good, Light to Moderate Traffic
C	Moderate Traffic, with Insignificant Delay
D	Heavy Traffic, with Significant Delay
E	Severe Congestion and Delay
F	Failed, Indicated Levels Cannot Be Handled

Table 9.2 - Levels of Service for Intersections

Level of Service	Signalized Intersection Capacity Utilization (ICU)	Signalized Intersection Control Delay (seconds/vehicle)	Unsignalized Intersection Control Delay (seconds/vehicle)
A	0.00 – 0.60	0 – 10	0 – 10
B	0.61 – 0.70	10.1 – 20	10 – 15
C	0.71 – 0.80	20.1 – 35	15 – 25
D	0.81 – 0.90	35.1 – 55	25 – 35
E	0.91 – 1.00	55.1 – 80	35 – 50
F	1.00 and up	80 or more	50 or more

Intersections along Bolsa Avenue and Bishop Place were analyzed using both the ICU and HCM methodologies. The "Traffix" traffic analysis program was used for the ICU methodology analysis. A traffic signal simulation program known as Synchro was used for the HCM methodology analysis. This program analyzes traffic signal issues such as overflows in left turn pockets, effect of pedestrians in crosswalks and other detailed issues, in order to facilitate traffic signal timing analysis in complex areas.

9.4 Intersection Capacity Analysis

The analysis of peak hour intersection conditions was conducted using the TRAFFIX software program developed by Dowling Associates and the "Synchro" traffic signal simulation program developed by Trafficware. The following peak periods were selected for analysis:

- Weekday AM (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM (peak hour between 4:00 PM and 6:00 PM)
- Weekend Midday (Saturday MD) (peak hour between 12:00 PM and 2:00 PM)

9.5 Traffic Count Data

Existing daily and peak hour traffic data was obtained from the City of Westminster Traffic Engineering Division, Counts Unlimited of Moreno Valley, and Traffic Data Services of Santa Ana, California, in August and September, 2008. All traffic count data used in this study is compiled in Appendix C of this report.

9.6 Future Traffic Volumes

Daily and peak hour traffic volumes for the study intersections under future conditions were forecast based on the Orange County Transportation Authority (OCTA) Orange County Transportation Analysis Model *(OCTAM)*. The Year 2030 ambient peak hour background traffic volumes were derived from increases indicated from a comparison of the base year and future year traffic models. These increases were applied to existing observed peak hour traffic volumes to forecast buildout without project traffic volumes.

The traffic model was used to produce link volume traffic forecasts in the study area at the weekday AM and PM, and weekend Mid-day (MD) levels, both for a base year model and a future year model. The AM, PM, and MD link volume forecasts from the base and future year models, along with the existing turning movement traffic counts, were used as the basis for producing future year traffic volumes. The traffic model forecasts were used to predict future turning movement volumes at the study intersections using a methodology which adjusts existing turning movement volumes based on expected growth in approach volumes.

9.7 Standards of Significance

The City of Westminster has determined that Level of Service D is the minimum acceptable level of service during peak hours at signalized and unsignalized intersections. Any signalized intersection operating at Level of Service E or F is considered to be operating deficiently. An impact is deemed significant according to the City of Westminster when the level of service is E or F and the project causes an increase in the Volume/Capacity ratio of 0.01 or more over the defined threshold. For further information on Level of Service please see Appendix D.

10. Existing Traffic Conditions

This section documents the existing traffic conditions in the Moran Street Comprehensive Plan area. The discussion presented here is limited to specific roadways in the project vicinity.

10.1 Existing Circulation Network

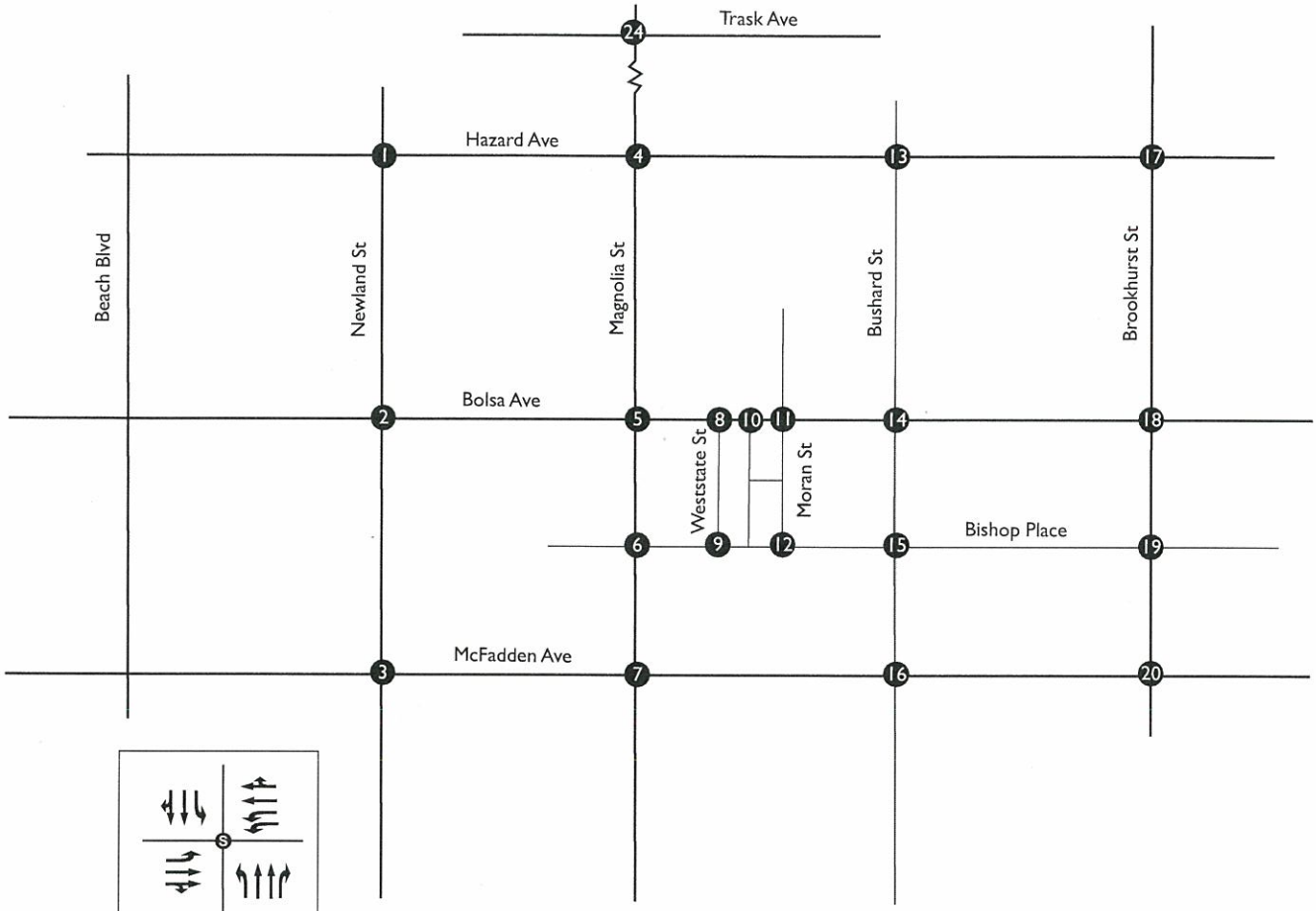
Streets in the project vicinity which could be affected by the proposed project include Newland Street, Magnolia Street, Weststate Street, Moran Street, Bushard Street, Brookhurst Street, Hazard Avenue, Bolsa Avenue, Bishop Place, and McFadden Avenue. Existing intersection geometry is shown in Figure 10.1 for relevant intersections among these streets.

Newland Street is a north-south secondary arterial located west of the project area. North of Bolsa Avenue, the roadway provides one lane in each direction with a painted two-way left-turn lane. South of Bolsa Avenue, the roadway provides two lanes in each direction. Painted left-turn lanes are provided at most intersections. Land uses along Newland Street in the project vicinity are primarily residential. The intersections of Newland Street/Hazard Avenue, Newland Street/Bolsa Avenue, and Newland Street/McFadden Avenue are signalized. The posted speed limit on Newland Street is 40 mph.

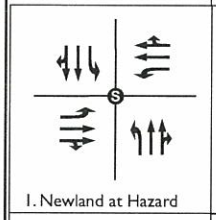
Magnolia Street is a north-south primary arterial located west of the project area. The roadway provides 2-3 lanes in each direction with painted two-way left-turn lane. Left-turn lanes are provided at most intersections. Land uses along Magnolia Street in the project vicinity are primarily commercial/retail and office, with some multi-family residential complexes and single family residential. The intersections of Magnolia Street and Hazard, Magnolia Street and Bolsa Avenue, Magnolia Street and Natoma Avenue/Bishop Place, and Magnolia Street/McFadden Avenue are signalized. The posted speed limit on Magnolia Street is 45 mph.

Weststate Street is a two-lane undivided street on a north-south alignment. The intersection of Weststate Street and Bolsa Avenue is stop controlled on the minor leg (Weststate Street). The intersection of Weststate Street and Bishop Place is also stop controlled on Weststate Street. Weststate Street at Bolsa Avenue provides right-in, right-out, and left-in access only from Bolsa. Parking is allowed on either side of Weststate Street, subject to a 2-hour time limit. Land uses along both sides of Weststate Street are commercial/retail and auto repair/maintenance shops.

Moran Street is a two-lane undivided street on a north-south alignment located within the project area. The intersection of Moran Street and Bolsa Avenue is signalized. The intersection of Moran Street and Bishop Place is stop controlled on Moran Street. On-street parking is allowed along the south-east portion of Moran Street, subject to a 2-hour time limit. Land uses along both sides of Moran Street are commercial/retail, auto repair/maintenance shops and a fire station.



24. Magnolia at Trask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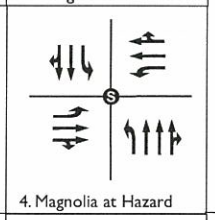
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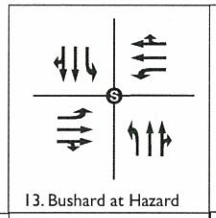
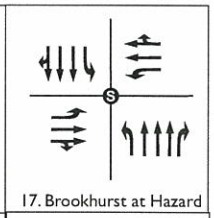
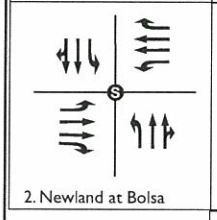
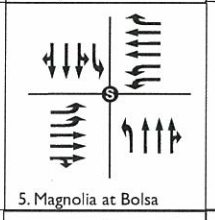
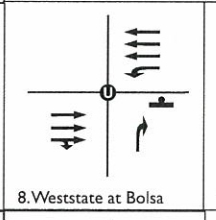
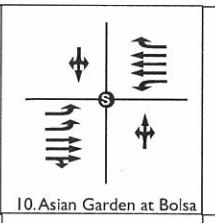

13. Bushard at Hazard

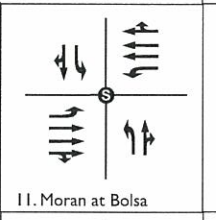

17. Brookhurst at Hazard

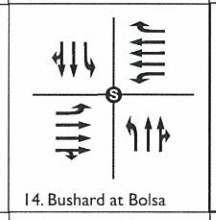

2. Newland at Bolsa

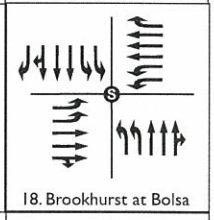

5. Magnolia at Bolsa

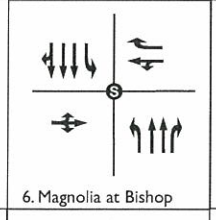

8. Weststate at Bolsa

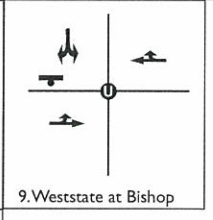

10. Asian Garden at Bolsa


11. Moran at Bolsa


14. Bushard at Bolsa


18. Brookhurst at Bolsa


6. Magnolia at Bishop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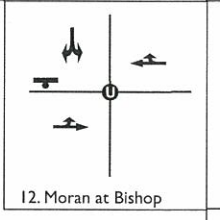
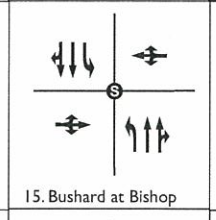

12. Moran at Bishop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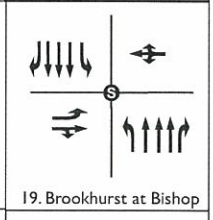
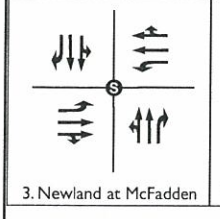
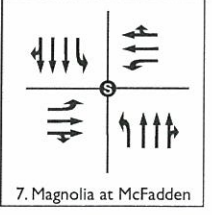
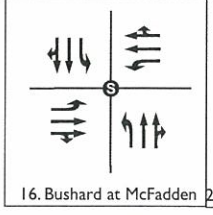

19. Brookhurst at Bishop


3. Newland at McFadden


7. Magnolia at McFadden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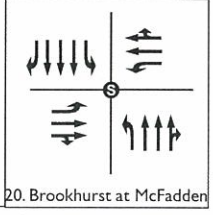
20. Brookhurst at McFadden

J:\2010\JB03013_WE Little Saigon Xwk\Analysis\Figures\JB03013_Traffic Figures

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City of Westminster — Figure 10.1

Little Saigon Traffic Impact and Parking Study — Existing Intersection Geometry

Bushard Street is a north-south secondary arterial located east of the project area. North of Bolsa Avenue, the roadway provides two lanes in each direction with a double yellow center stripe. South of Bolsa Avenue, the roadway provides two lanes in each direction with a painted two-way left turn lane. Left turn lanes are provided at most intersections. The intersections of Bushard Street and Hazard Avenue, Bushard Street and Bolsa Avenue, Bushard Street and Bishop Place, and Bushard Street and McFadden Avenue are signalized. The posted speed limit on Bushard Street is 40 mph. Land uses along Bushard Street are primarily residential with 2 schools and some commercial/retail at Bolsa Avenue.

Brookhurst Street is north-south major arterial located east of the project area. North of Bishop Place, the roadway provides three lanes in each direction with raised medians and left-turn pockets at most intersections. South of Bishop Place, the roadway provides three lanes in each direction with a painted two-way left turn lane or raised median, with left turn pockets at Bishop Place and McFadden Avenue. The intersections of Brookhurst Street and Hazard Avenue, Brookhurst Street and Bolsa Avenue, Brookhurst Street and Bishop Place, and Brookhurst Street and McFadden Avenue are signalized. The posted speed limit along Brookhurst Street is 45 mph. Land uses along Brookhurst Street are primarily commercial/retail and office with some multi-family residential complexes and single family residential.

Hazard Avenue is an east-west secondary arterial located north of the project area. The street provides two lanes in each direction with a double yellow center stripe. Painted left-turn lanes are provided at most intersections. Land uses along Hazard Avenue are primarily residential, with some commercial/retail and offices at Magnolia Street and Brookhurst Street. The intersections of Hazard Avenue and Newland Street, Hazard Avenue and Magnolia Street, Hazard Avenue and Bushard, and Hazard Avenue and Brookhurst Street are signalized. The posted speed limit along Hazard Avenue is 40 mph.

Bolsa Avenue is an east-west major arterial located adjacent to and north of the project area. In the project vicinity, the roadway provides three lanes in each direction with raised medians and left turn pockets at most intersections. The intersections of Bolsa Avenue and Newland Street, Bolsa Avenue and Magnolia Street, Bolsa Avenue and Asian Garden, Bolsa Avenue and Moran Street, Bolsa Avenue and Bushard Street, and Bolsa Avenue and Brookhurst Street are signalized. The intersection of Bolsa Avenue and Weststate Street is stop controlled on the minor leg (Weststate Street). The posted speed limit along Bolsa Avenue is 35 mph west of Newland Street and 40 mph east of Newland Street. Land uses along Bolsa Avenue are primarily commercial/retail and offices, with some multi-family residential complexes.

Bishop Place is a two-lane undivided street located south of the project area. Within the project vicinity, the roadway allows parking on either side of the street, subject to a 2-hour time limit. The intersections of Bishop Place and Magnolia Street, Bishop Place and Bushard Street, and Bishop Place and Brookhurst Street are signalized. The posted speed limit along Bishop Place is 25 mph. Land uses along Bishop Place are primarily residential with 2 schools. The intersections of Bishop Place and Weststate Street, and Bishop Place and Moran Street are stop controlled on the minor legs (Weststate Street and Moran Street).

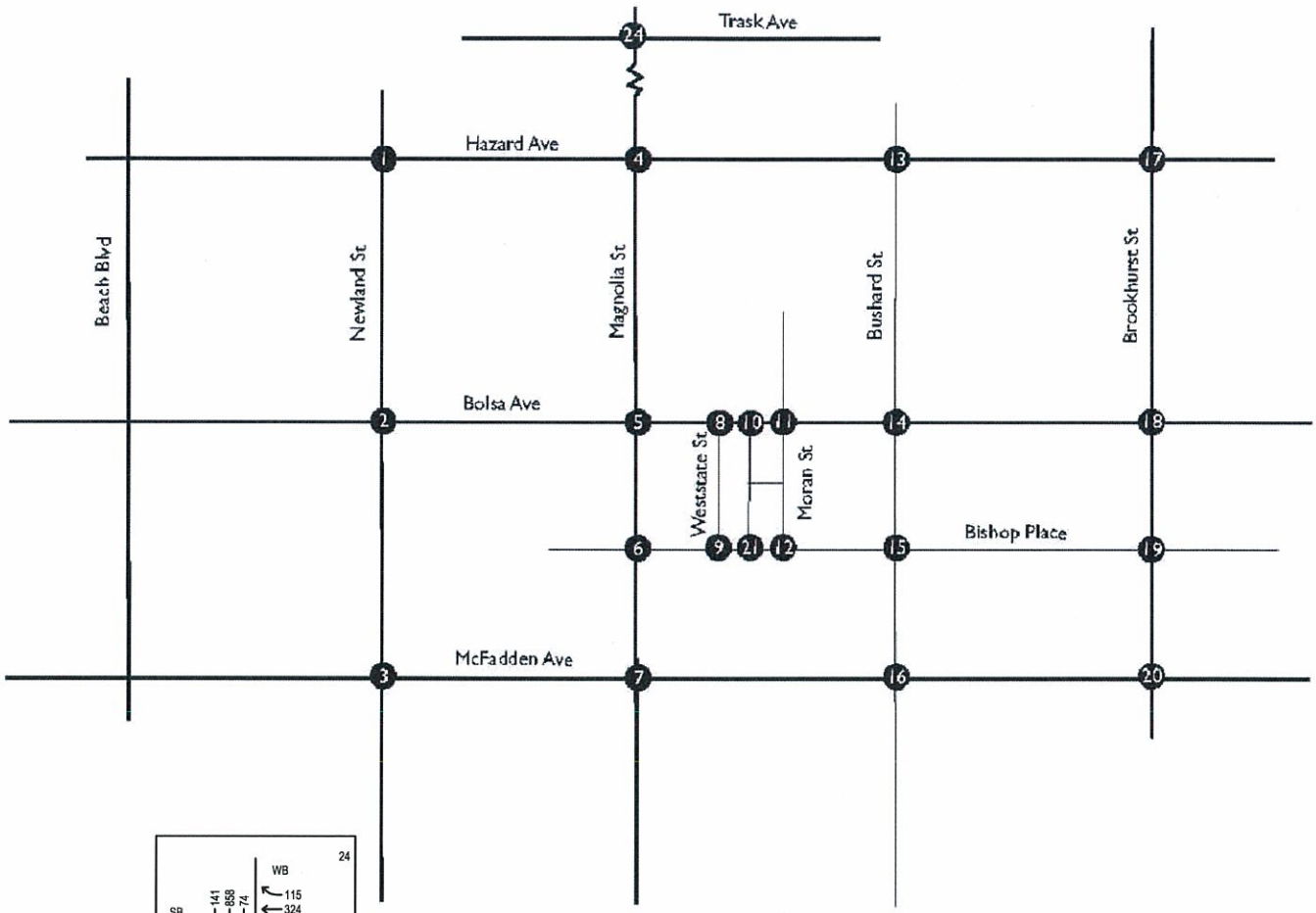
McFadden Avenue is an east-west secondary arterial located south of the project area. Near the project vicinity, the roadway provides two lanes in each direction with a painted two-way left turn lane. Painted left turn lanes are provided at most intersections. Land uses along McFadden Avenue are primarily residential with some commercial/retail and offices at Magnolia Street and Brookhurst Street. The posted speed limit along McFadden Avenue is 40 mph.

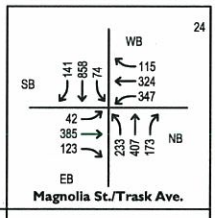
Regional circulation is provided by State Route 22 approximately 1 ½ miles north of the project area and by Interstate 405 approximately 1 ½ miles southwest of the project area.

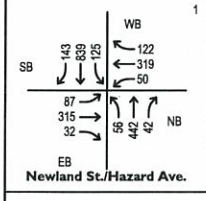
10.2 Peak Hour Intersection Level of Service

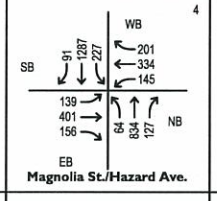
Figure 10.2 illustrates the existing peak hour traffic volumes during the Weekday AM peak hour. Figure 10.3 illustrates the existing peak hour traffic volumes during the Weekday PM peak hour. Based on these existing traffic volumes, level of service analyses were conducted for the twenty-one study intersections. The results of these analyses are summarized in Table 10.1 for the existing Weekday AM and PM conditions.

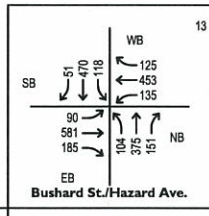
Figure 10.4 illustrates the existing peak hour traffic volumes during the Weekend peak hour. Based on these existing traffic volumes, level of service analyses were conducted for the twenty-one study intersections. The results of these analyses are summarized in Table 10.2 for existing Weekend conditions.

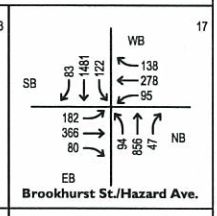


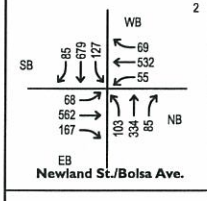


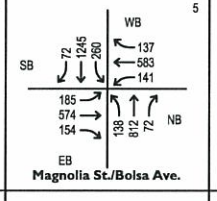


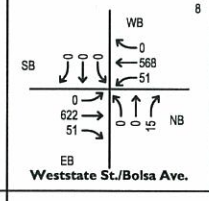


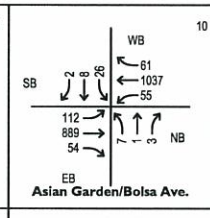


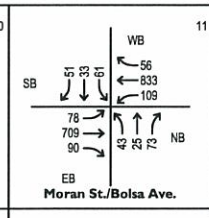


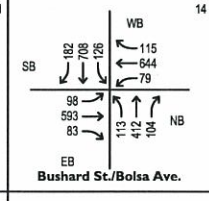


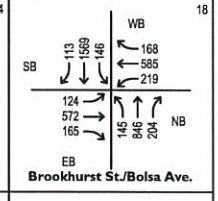


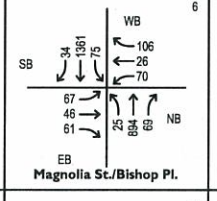


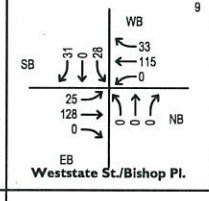


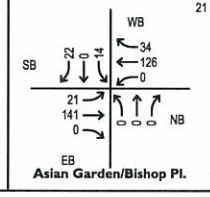


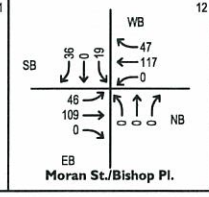


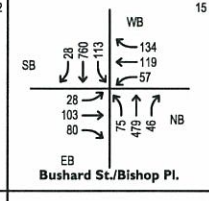


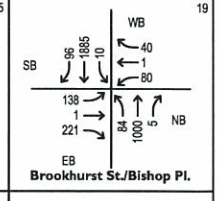


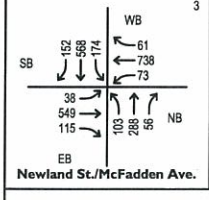


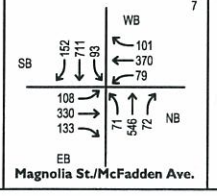


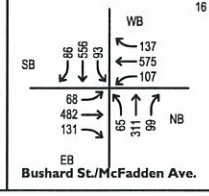


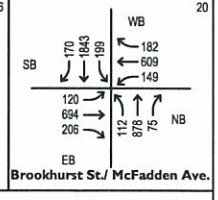












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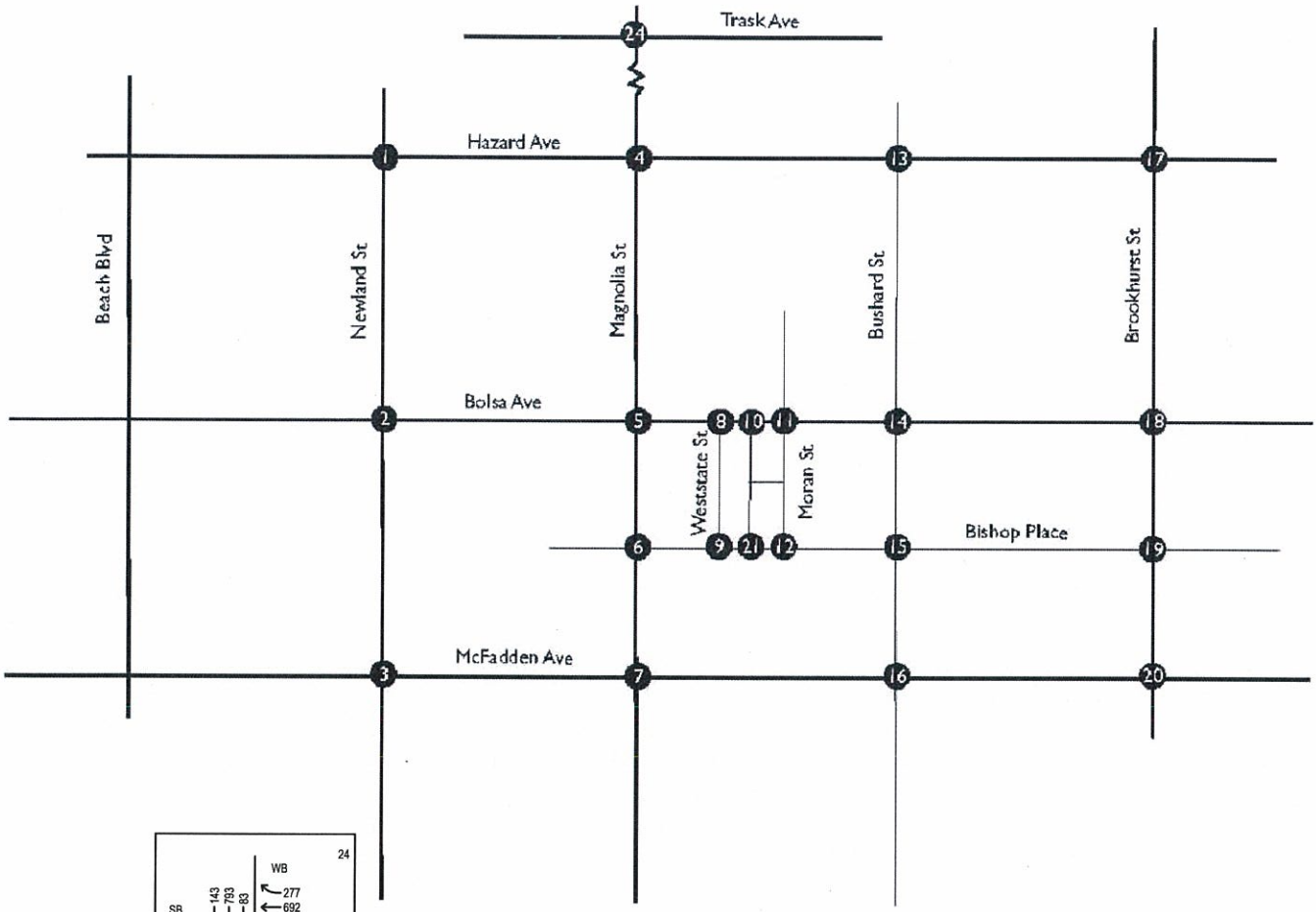
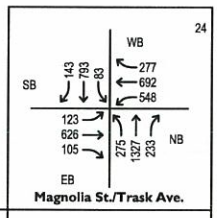
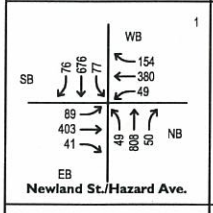
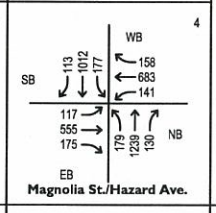
City of Westminster — Figure 10.2

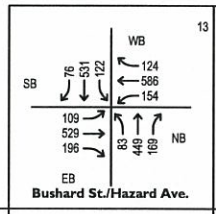
Little Saigon Traffic & Parking Study — Existing Weekday AM Peak Hour Volumes

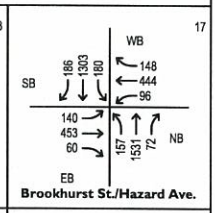


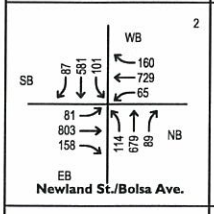


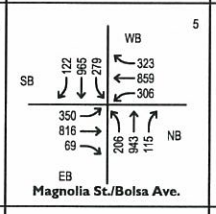


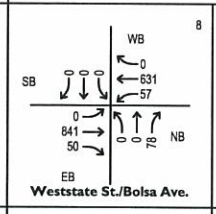


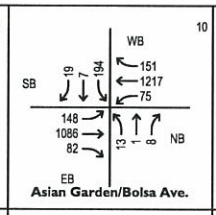


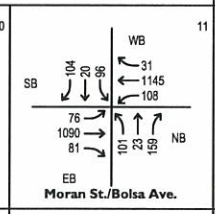


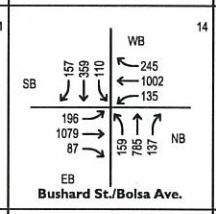


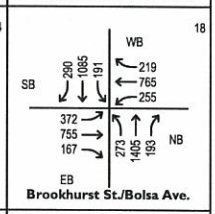


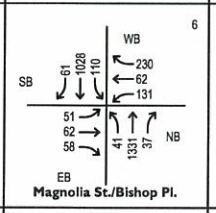


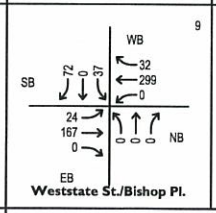


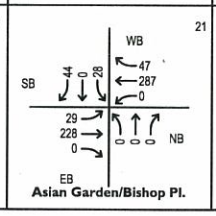


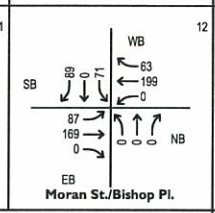


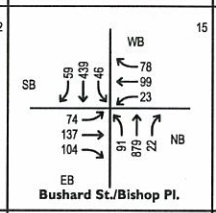


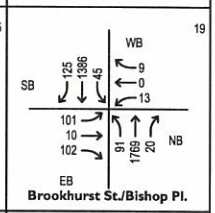


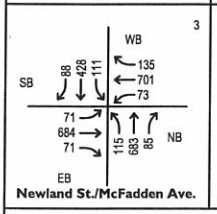


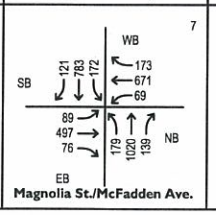


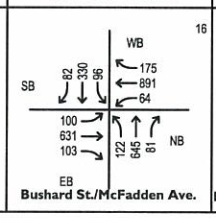


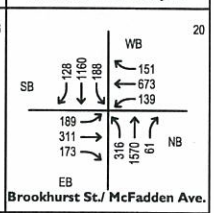












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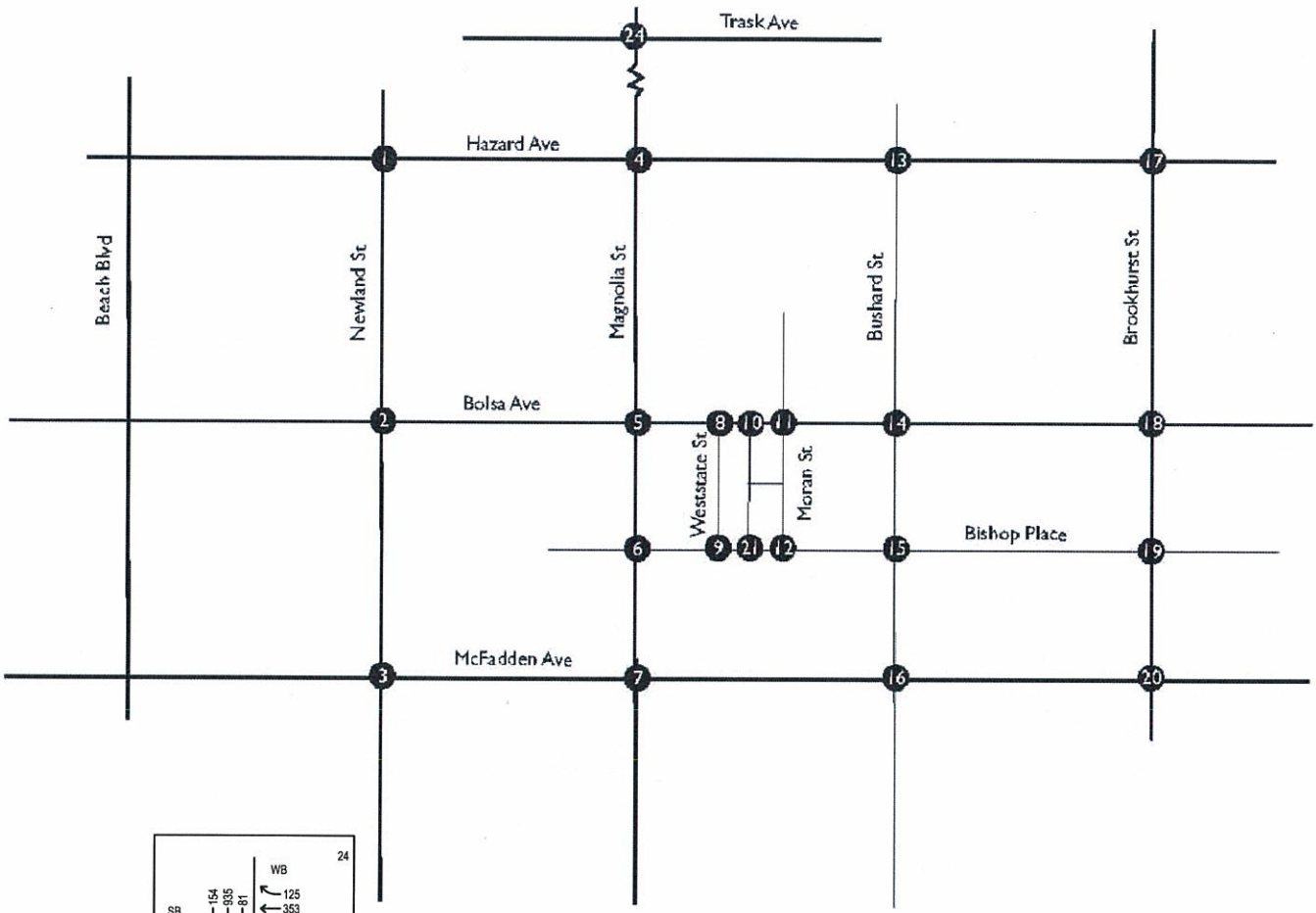
City of Westminster — Figure 10.3

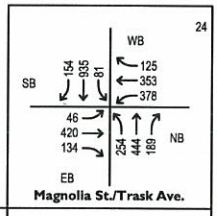
Little Saigon Traffic & Parking Study — Existing Weekday PM Peak Hour Volumes

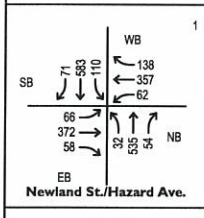
Table 10.1- Existing Intersection Conditions, Weekday

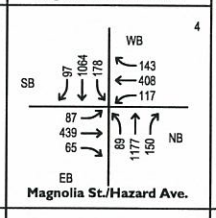
Intersection		AM Peak Hour		PM Peak Hour	
		Volume/ Capacity or Delay	Level Of Service	Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)					
1	Newland Street at Hazard Avenue	.599	A	.584	A
2	Newland Street at Bolsa Avenue	.553	A	.652	B
3	Newland Street at McFadden Avenue	.684	B	.779	C
4	Magnolia Street at Hazard Avenue	.791	C	.856	D
5	Magnolia Street at Bolsa Avenue	.848	D	.930	E
6	Magnolia Street at Bishop Place	.528	A	.727	C
7	Magnolia Street at McFadden Avenue	.487	A	.722	C
10	Asian Garden at Bolsa Avenue	.322	A	.494	A
11	Moran Street at Bolsa Avenue	.383	A	.535	A
13	Bushard Street at Hazard Avenue	.636	B	.631	B
14	Bushard Street at Bolsa Avenue	.598	A	.742	C
15	Bushard Street at Bishop Place	.558	A	.610	B
16	Bushard Street at McFadden Avenue	.553	A	.737	C
17	Brookhurst Street at Hazard Avenue	.679	B	.764	C
18	Brookhurst Street at Bolsa Avenue	.650	B	.722	C
19	Brookhurst Street at Bishop Place	.690	B	.524	A
20	Brookhurst Street at McFadden Ave	.889	D	.891	D
24	Magnolia Street at Trask Avenue	.732	C	.863	D
Unsignalized Intersections (Delay, LOS)					
8	Weststate Street at Bolsa Avenue	13.1	B	14.0	B
9	Weststate Street at Bishop Place	10.2	B	12.6	B
12	Moran Street at Bishop Place	10.1	B	15.9	C

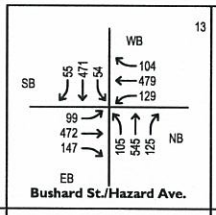
Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

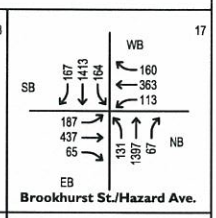


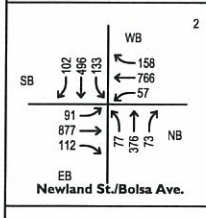


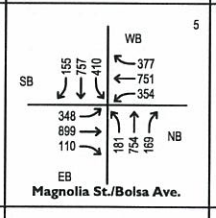


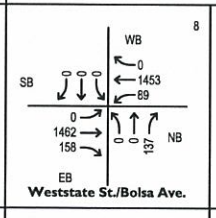


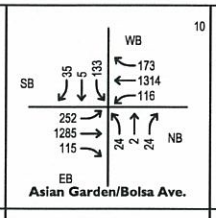


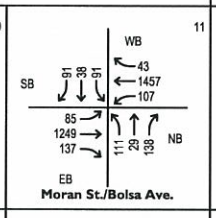


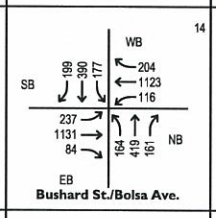


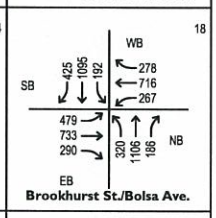


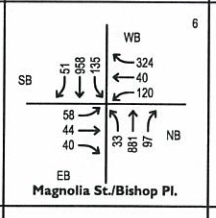


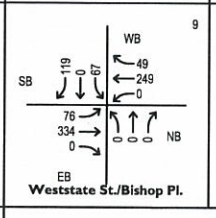


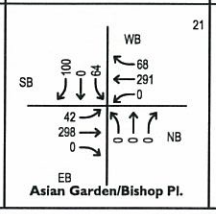


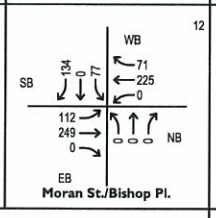


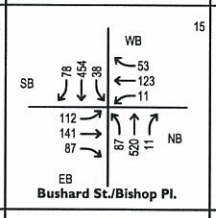


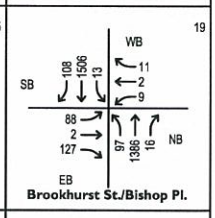


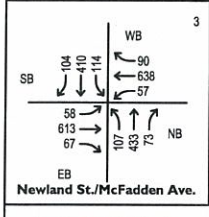


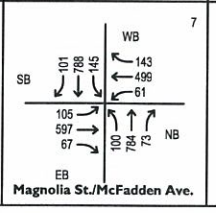


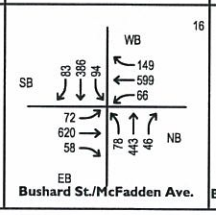


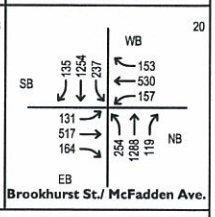












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City of Westminster — Figure 10.4

Little Saigon Traffic & Parking Study — Existing Weekend (Saturday MD) Peak Hour Volumes

Table 10.2 - Existing Intersection Conditions, Weekend

	Intersection	Saturday Midday Peak Hour	
		Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)			
1	Newland Street at Hazard Avenue	.527	A
2	Newland Street at Bolsa Avenue	.604	B
3	Newland Street at McFadden Avenue	.662	B
4	Magnolia Street at Hazard Avenue	.688	B
5	Magnolia Street at Bolsa Avenue	.868	D
6	Magnolia Street at Bishop Place	.619	B
7	Magnolia Street at McFadden Avenue	.553	A
10	Asian Garden at Bolsa Avenue	.548	A
11	Moran Street at Bolsa Avenue	.558	A
13	Bushard Street at Hazard Avenue	.612	B
14	Bushard Street at Bolsa Avenue	.709	C
15	Bushard Street at Bishop Place	.478	A
16	Bushard Street at McFadden Avenue	.513	A
17	Brookhurst Street at Hazard Avenue	.725	C
18	Brookhurst Street at Bolsa Avenue	.694	B
19	Brookhurst Street at Bishop Place	.493	A
20	Brookhurst Street at McFadden Avenue	.750	C
24	Magnolia Street at Trask Avenue	.794	C
Unsignalized Intersections (Delay, LOS)			
8	Weststate Street at Bolsa Avenue	18.8	C
9	Weststate Street at Bishop Place	16.9	C
12	Moran Street at Bishop Place	17.8	C

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

11. Year 2030 Buildout Traffic Conditions Without Project

This section documents the Year 2030 Buildout traffic conditions in the Comprehensive Plan area without the addition of project-related traffic to the surrounding street system. Buildout without project traffic is considered "background" traffic, in that it includes ambient traffic growth but does not include project traffic. It is developed from the OCTAM Year 2030 traffic model and existing traffic counts.

Buildout Without Project intersection geometry is shown in Figure 11.1 for relevant intersections in the study area.

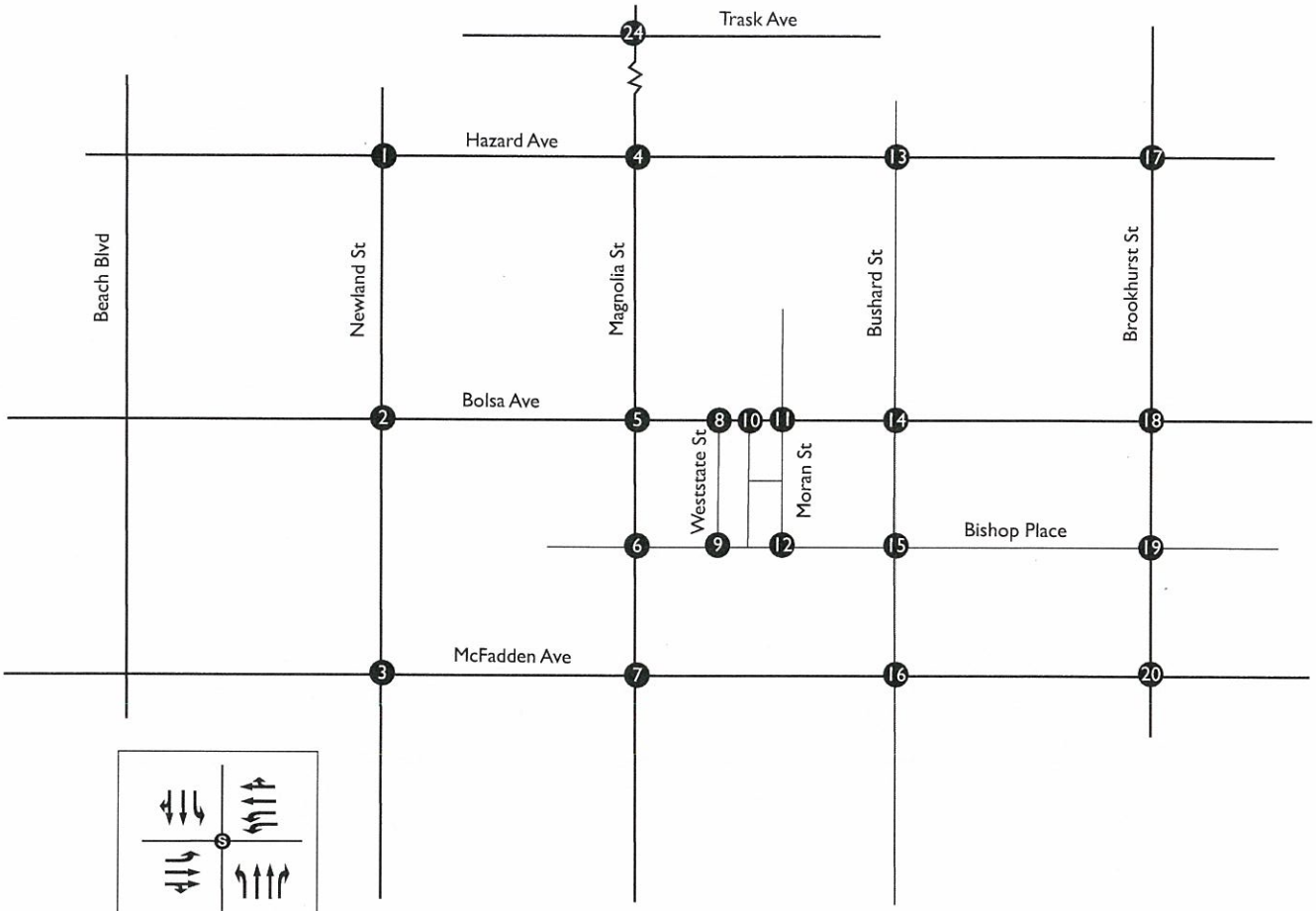
11.1 Peak Hour Intersection Level of Service

Figures 11.2 and 11.3 illustrate the Comprehensive Plan area Year 2030 Buildout Without Project AM and PM peak hour traffic volumes, respectively.

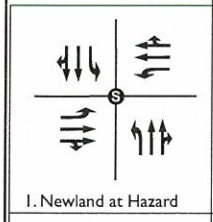
Table 11.1 summarizes the results of the level of service analyses for this scenario. Traffic conditions at seventeen of the twenty-one study intersections will remain at Level of Service D or better in the AM peak hour. Four signalized intersections, Newland Street at McFadden Avenue, Magnolia Street at Hazard Avenue, Magnolia Street at Bolsa Avenue, and Brookhurst Street at McFadden Avenue will operate at Level of Service E or worse in the AM peak hour unless improvements are provided. Sixteen of the twenty-one study intersections will remain at Level of Service D or better in the PM peak hour. Four signalized intersections, Magnolia Street at Trask Avenue, Magnolia Street at Hazard Avenue, Magnolia Street at Bolsa Avenue, and Brookhurst Street at McFadden Avenue, will operate at Level of Service E or worse in the PM peak hour unless improvements are provided. One unsignalized intersection, Moran Street at Bishop Place, will operate at Level of Service E.

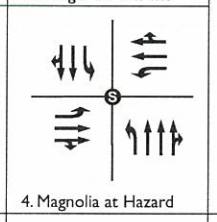
Figure 11.4 illustrates the Year 2030 Buildout Without Project Weekend peak hour traffic volumes.

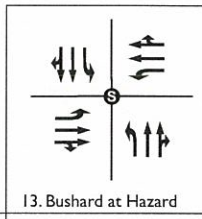
Table 11.2 summarizes the results of the level of service analyses for this scenario during the weekend peak hour. As shown in the table, traffic conditions at nineteen of the twenty-one study intersections will remain at Level of Service D or better in the Weekend peak hour. Two signalized intersections, Magnolia Street at Trask Avenue, and Magnolia Street at Bolsa Avenue, will operate at Level of Service E or worse in the Weekend peak hour without improvements. One unsignalized intersection, Moran Street at Bishop Place, will operate at Level of Service F.

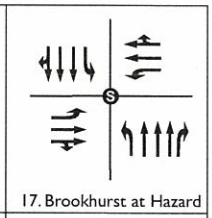


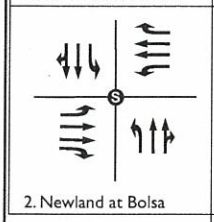
24. Magnolia at Trask

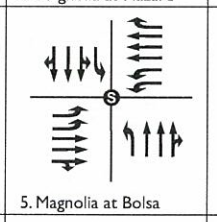

1. Newland at Hazard

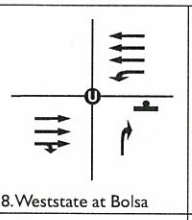

4. Magnolia at Hazard

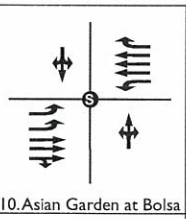

13. Bushard at Hazard

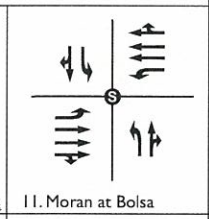

17. Brookhurst at Hazard


2. Newland at Bolsa


5. Magnolia at Bolsa


8. Weststate at Bolsa


10. Asian Garden at Bolsa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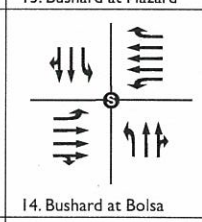
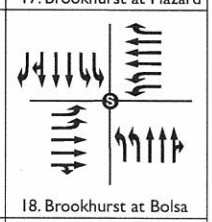
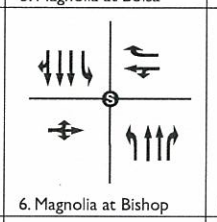
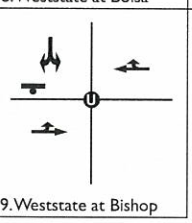

14. Bushard at Bolsa


18. Brookhurst at Bolsa


6. Magnolia at Bishop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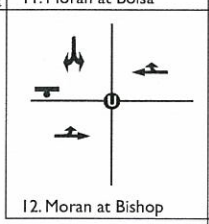
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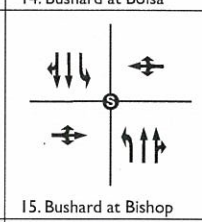
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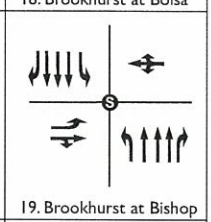
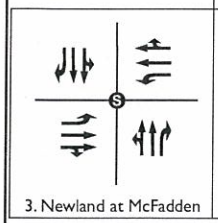
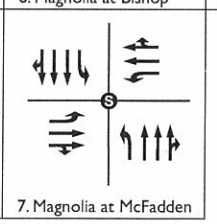
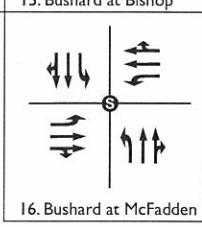
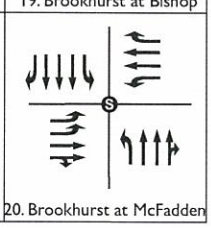

19. Brookhurst at Bishop


3. Newland at McFadden


7. Magnolia at McFadden


16. Bushard at McFadden


20. Brookhurst at McFadden

J:\2010\JB03013_WE Little Saigon Xwk\Analysis\Figures\JB03013_Traffic Figures

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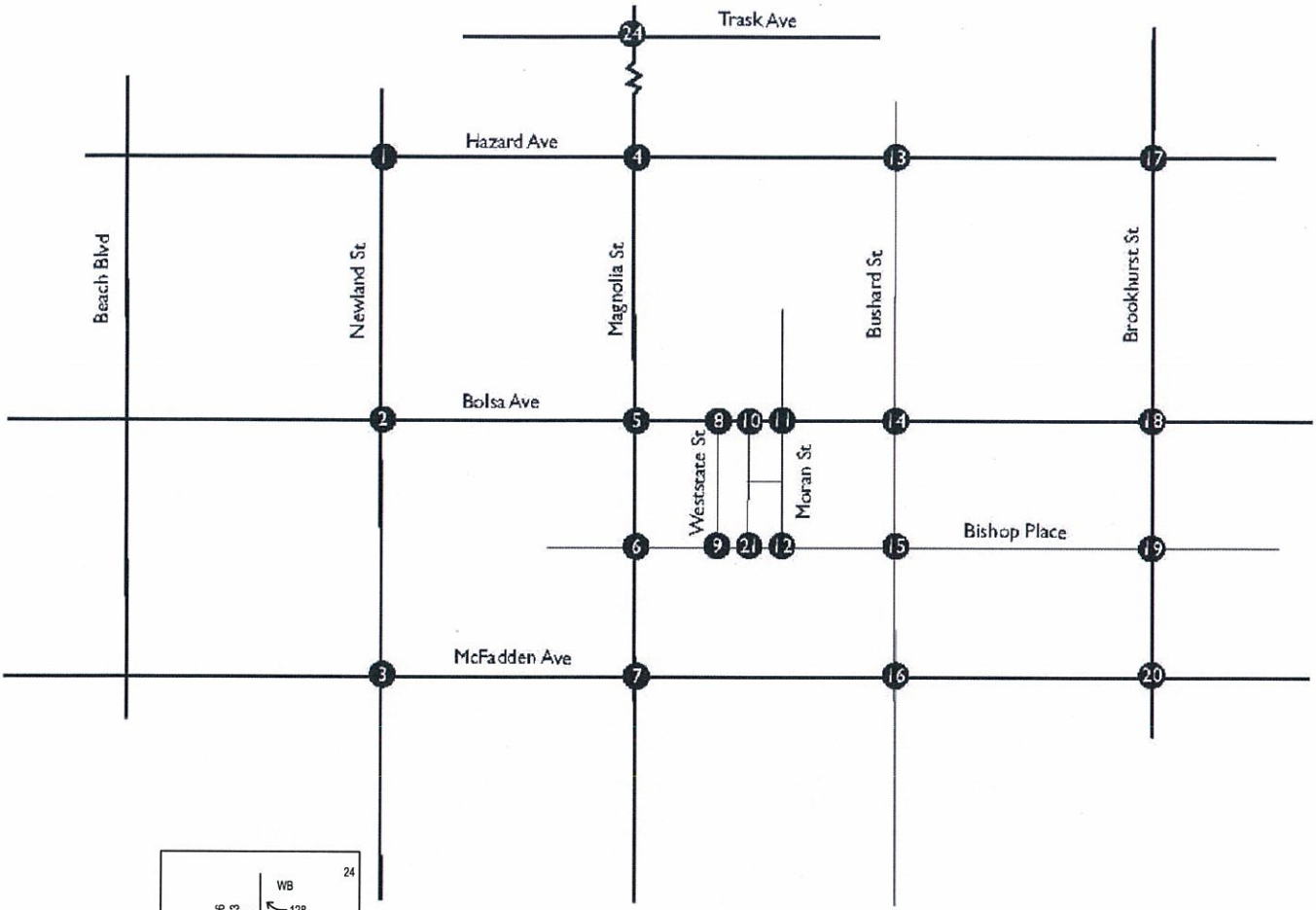
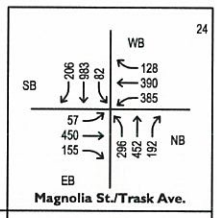
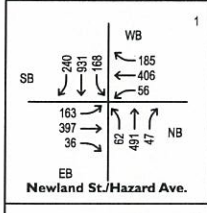
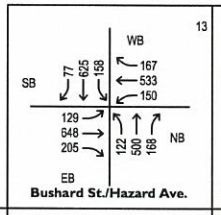
City of Westminster — Figure 11.1

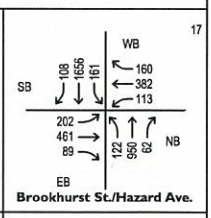
Little Saigon Traffic Impact and Parking Study — Buildout Without Project Intersection Geometry

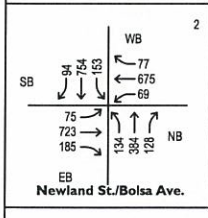


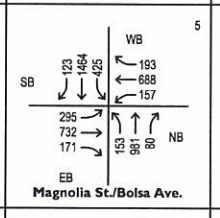


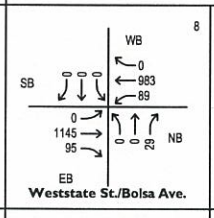


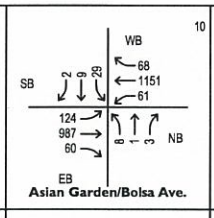


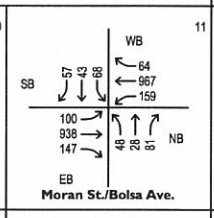


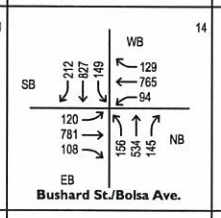


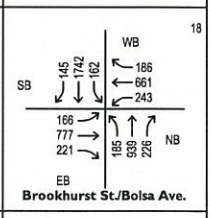


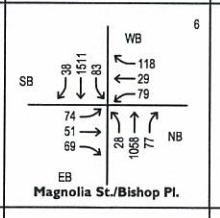


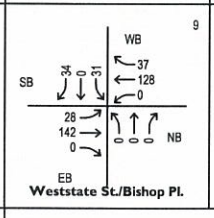


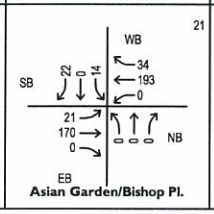


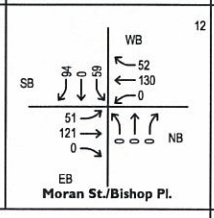


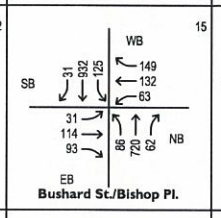


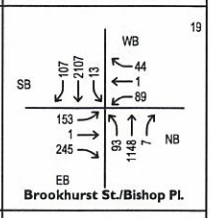


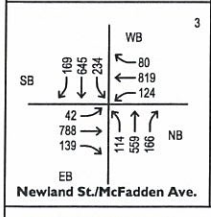


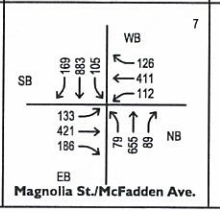


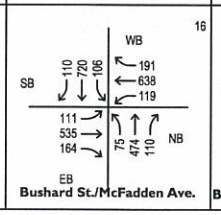












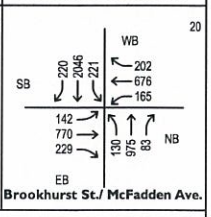


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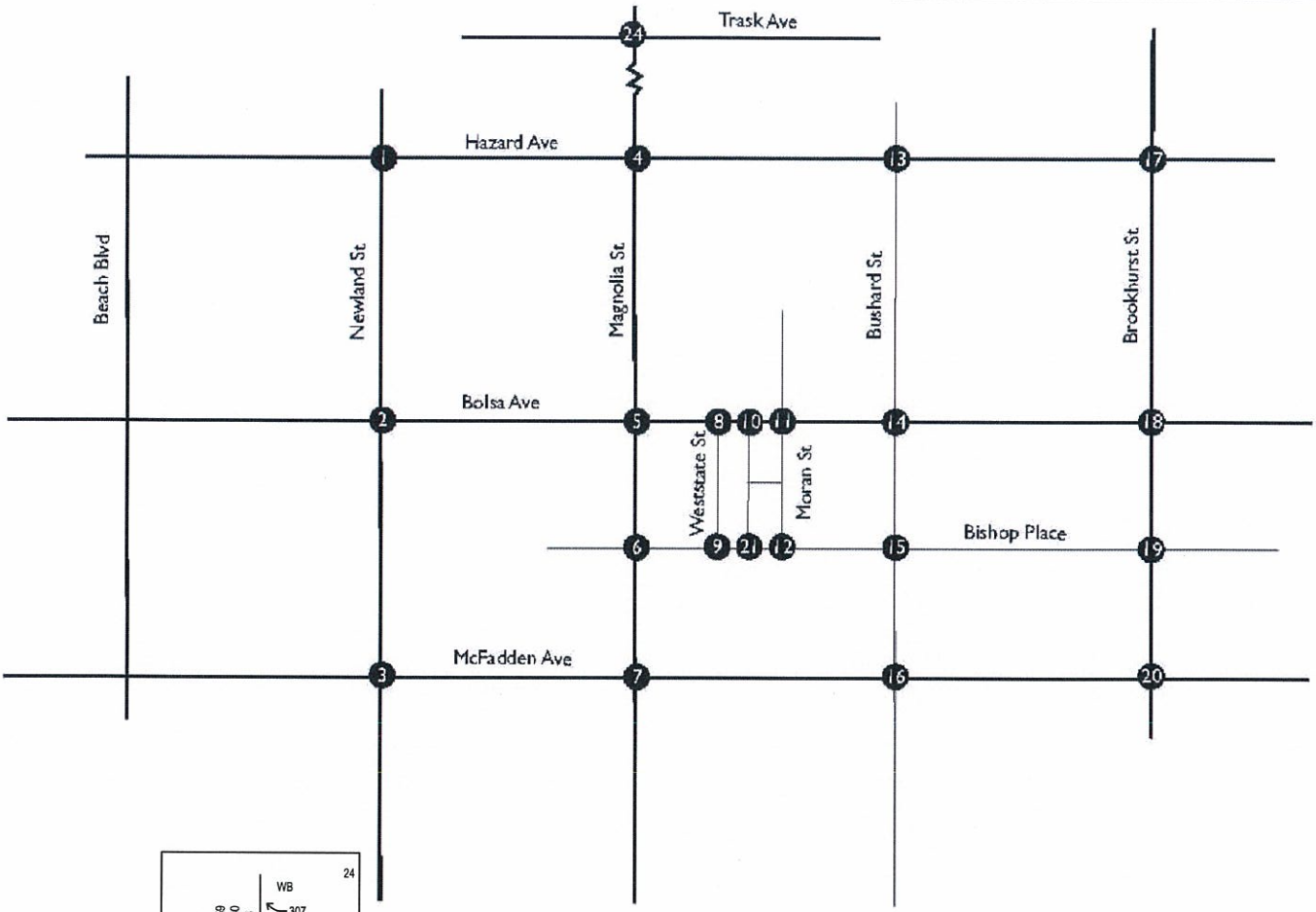
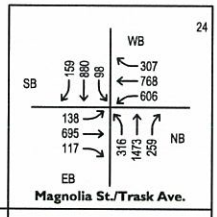
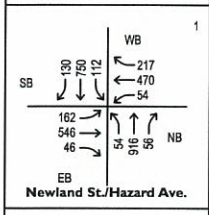
Figure 11.2

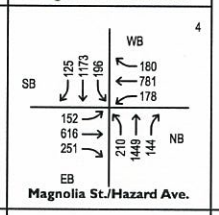
Little Saigon Traffic & Parking Study

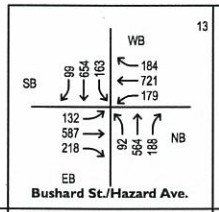
Buildout without Project, Weekday AM Peak Hour Volumes

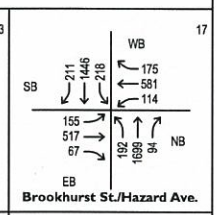


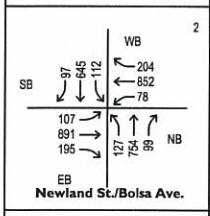


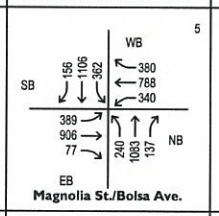


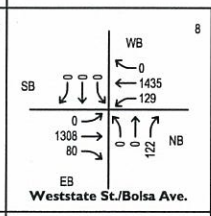


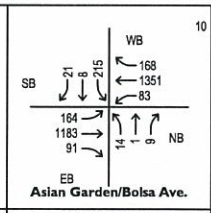


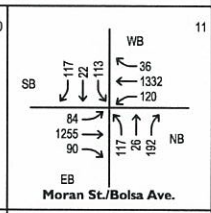


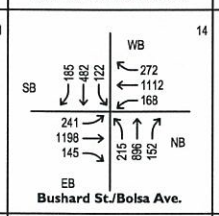


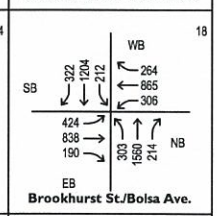


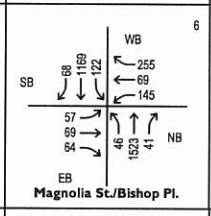


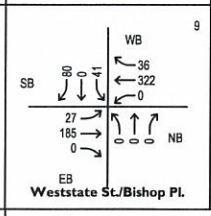


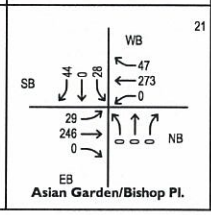


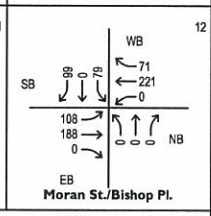


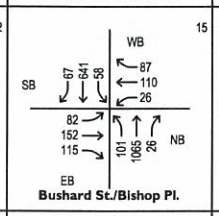


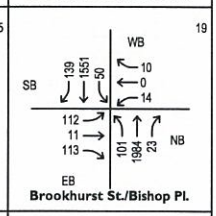


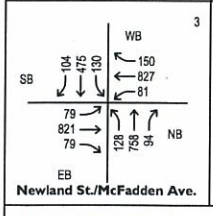


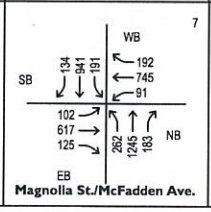


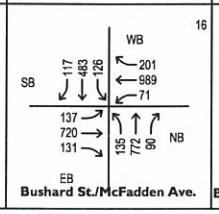


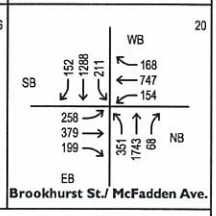












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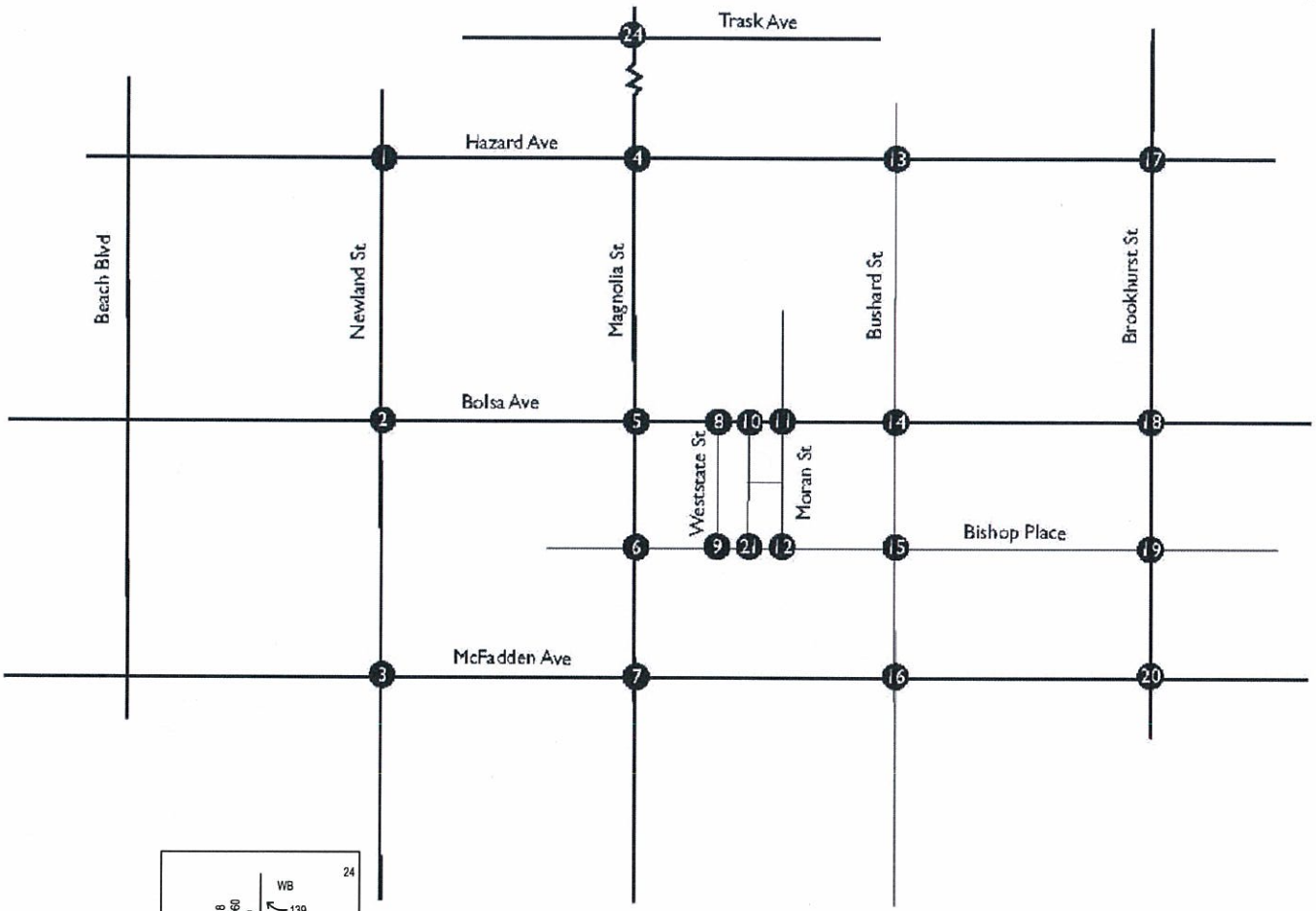
City of Westminster — Figure 11.3

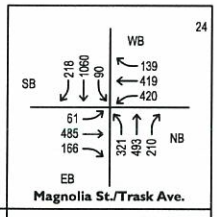
Little Saigon Traffic & Parking Study — Buildout without Project, Weekday PM Peak Hour Volumes

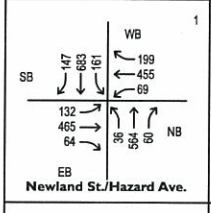
Table 11.1- Peak Hour Intersection Conditions
Buildout without Project, Weekday

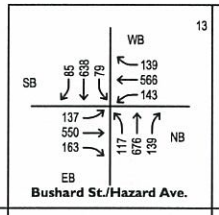
	Intersection	AM Peak Hour		PM Peak Hour	
		Volume/ Capacity or Delay	Level Of Service	Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)					
1	Newland Street at Hazard Avenue	.761	C	.733	C
2	Newland Street at Bolsa Avenue	.646	B	.728	C
3	Newland Street at McFadden Avenue	.910	E	.878	D
4	Magnolia Street at Hazard Avenue	.920	E	.992	E
5	Magnolia Street at Bolsa Avenue	1.013	F	1.069	F
6	Magnolia Street at Bishop Place	.604	B	.818	D
7	Magnolia Street at McFadden Avenue	.570	A	.830	D
10	Asian Garden at Bolsa Avenue	.357	A	.544	A
11	Moran Street at Bolsa Avenue	.488	A	.613	B
13	Bushard Street at Hazard Avenue	.746	C	.739	C
14	Bushard Street at Bolsa Avenue	.723	C	.845	D
15	Bushard Street at Bishop Place	.644	B	.703	C
16	Bushard Street at McFadden Avenue	.691	B	.863	D
17	Brookhurst Street at Hazard Avenue	.790	C	.885	D
18	Brookhurst Street at Bolsa Avenue	.762	C	.804	D
19	Brookhurst Street at Bishop Place	.764	C	.580	A
20	Brookhurst Street at McFadden Ave	.986	E	1.017	F
24	Magnolia Street at Trask Avenue	.857	D	.950	E
Unsignalized Intersections (Delay, LOS)					
8	Weststate Street at Bolsa Avenue	14.6	B	16.5	C
9	Weststate Street at Bishop Place	10.5	B	13.5	B
12	Moran Street at Bishop Place	11.5	B	19.4	E

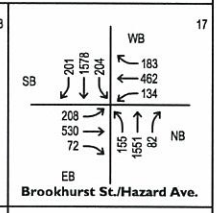
Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

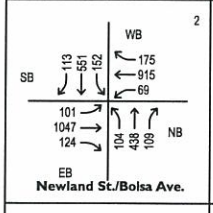


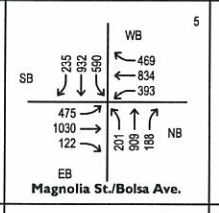


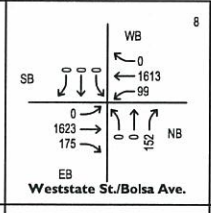


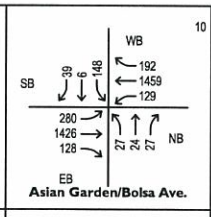


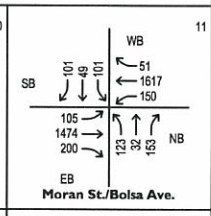


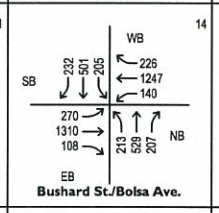


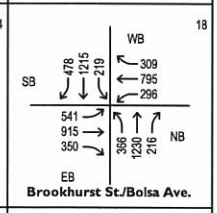


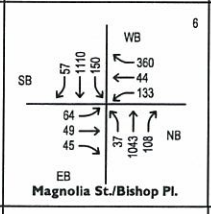


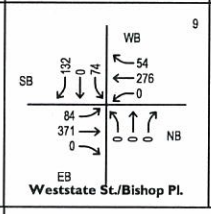


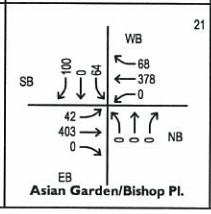


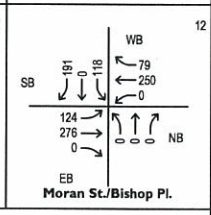


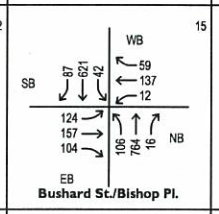


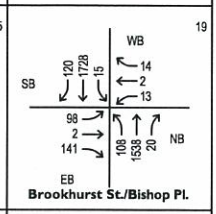


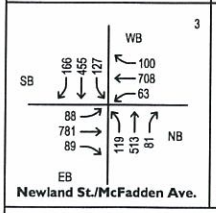


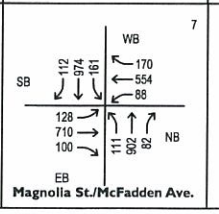


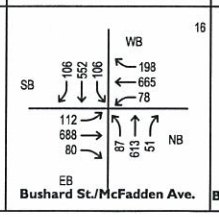


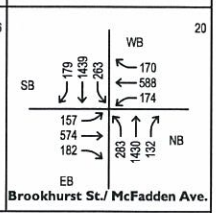












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City of Westminster — Figure 11.4

Little Saigon Traffic & Parking Study — Buildout without Project Weekend (Saturday MD) Peak Hour Volumes

Table 11.2 - Peak Hour Intersection Conditions
Buildout Without Project, Weekend

	Intersection	Saturday Midday Peak Hour	
		Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)			
1	Newland Street at Hazard Avenue	.691	B
2	Newland Street at Bolsa Avenue	.704	C
3	Newland Street at McFadden Avenue	.757	C
4	Magnolia Street at Hazard Avenue	.878	D
5	Magnolia Street at Bolsa Avenue	1.083	F
6	Magnolia Street at Bishop Place	.703	C
7	Magnolia Street at McFadden Avenue	.626	B
10	Asian Garden at Bolsa Avenue	.608	B
11	Moran Street at Bolsa Avenue	.662	B
13	Bushard Street at Hazard Avenue	.714	C
14	Bushard Street at Bolsa Avenue	.824	D
15	Bushard Street at Bishop Place	.572	A
16	Bushard Street at McFadden Avenue	.631	B
17	Brookhurst Street at Hazard Avenue	.830	D
18	Brookhurst Street at Bolsa Avenue	.774	C
19	Brookhurst Street at Bishop Place	.573	A
20	Brookhurst Street at McFadden Avenue	.860	D
24	Magnolia Street at Trask Avenue	.921	E
Unsignalized Intersections (Delay, LOS)			
8	Weststate Street at Bolsa Avenue	23.6	C
9	Weststate Street at Bishop Place	20.1	C
12	Moran Street at Bishop Place	32.5	D

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

12. Project Related Traffic

The proposed Moran Street Comprehensive Plan consists of approximately 293,680 square feet of commercial/retail, office and residential uses in the project area. It is projected that the land use split for this commercial development will be approximately180,300 square feet of commercial/retail land use, 74,970 square feet of restaurant use, and 38,400 square feet of office use. In addition, up to 115 residential units and a 120-room hotel with banquet space is projected. This mixed-use project is expected to generate additional traffic volumes as documented below.

12.1 Project Trip Generation

Trip generation is a measure or forecast of the number of trips that begin or end at the project site. All or part of these trips will result in traffic increases on the streets where they occur. Trip generation is a function of the extent and type of development proposed for the site. Trip generation is generally equal to the traffic volume expected at project entrances. The trip generation rates are equivalent to the number of trips that start or end (in and out) at the project site, and are specific by land use for a given time period (i.e. AM peak hour).

The project trips summarized in this study are based on trip generation rates provided by the Institute of Transportation Engineers (ITE) report *Trip Generation, 8th Edition*. The ITE report is widely used in Southern California and indicates the probable traffic generation rates for various land uses based on studies of existing developments in comparable settings.

Trip generation rates are expressed as a function of a given characteristic of the land use area (i.e. floor area, site area, number of employees, or seating capacity. Trip generation rates specific to this project are presented in Table 12.1 for weekday trips and Table 12.2 for weekend trips. Weekday and Weekend trip generation are presented for Scenario 5 in Tables 12.3 and 12.4. Weekday and Weekend trip generation are presented for Scenario 6 in tables 12.5 and 12.6.

12.2 Existing Land Use Traffic

A mixture of light industrial and retail businesses currently occupy the project site. These existing uses contribute to traffic currently being generated in the study area. Existing traffic generated by these existing uses will be replaced by the proposed project traffic, and is therefore deducted from the proposed project trip generation. These existing use "trip credits" apply to the existing uses currently on the site, and result in a net trip generation lower than the gross trip generation from the proposed project. The trip credits are deducted from the project traffic as shown in Tables 12.3 - 12.6 for weekday and weekend net trip generation.

Table 12.1 - Weekday Trip Generation Rates

Land Use	Measure	Daily	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
Trip Generation Rates								
Residential (Condo) ITE Code 230	DU	5.81	0.44	0.07	0.37	0.52	0.35	0.17
Residential (Senior) ITE Code 252	DU	3.48	0.13	0.05	0.08	0.16	0.10	0.06
Specialty Retail ITE Code 814	1,000 sf	44.32	6.84	3.28	3.56	5.02	2.81	2.21
Retail (Mall) ITE Code 820	1,000 sf	42.94	1.00	0.61	0.39	3.73	1.83	1.90
Restaurant (High Turnover) ITE Code 932	1,000 sf	127.15	11.52	5.99	5.53	11.15	6.58	4.57
Restaurant (Quality) ITE Code 931	1,000 sf	89.95	0.81	0.54	0.27	7.49	5.02	2.47
Office ITE Code 710	1,000 sf	11.01	1.55	1.36	0.19	1.49	0.25	1.24
Hotel ITE Code 310	Occupied Rooms	8.92	0.67	0.39	0.28	0.70	0.34	0.36

Table 12.2 - Weekend Trip Generation Rates

Land Use	Measure	Daily	MD Peak Hour		
			Total	In	Out
Trip Generation Rates					
Residential (Condo) ITE Code 230	DU	5.67	0.47	0.25	0.22
Residential (Senior) ITE Code 252	DU	2.51	0.08	0.04	0.04
Specialty Retail ITE Code 814	1,000 sf	42.04	8.79	4.22	4.57
Retail (Mall) ITE Code 820	1,000 sf	49.97	4.89	2.54	2.35
Restaurant (High Turnover) ITE Code 932	1,000 sf	158.37	20.00	12.60	7.40
Restaurant (Quality) ITE Code 931	1,000 sf	94.36	10.82	6.38	4.44
Office ITE Code 710	1,000 sf	2.37	0.41	0.22	0.19
Hotel ITE Code 310	Occupied Rooms	10.50	0.87	0.43	0.44

12.3 Project Traffic

Trip generation for the proposed project consisting of 71,760 square feet of specialty retail space, 108,540 square feet of shopping center retail, 33,180 square feet of high turnover restaurant, 41,790 square feet of dine-in restaurant, 38,400 square feet of office, a total of 115 residential dwelling units, and 120-room hotel is shown in Tables 12.3 - 12.6. Zone 1 indicates expected trip generation for the Asian Garden mall area, and Zone 2 indicates expected trip generation for the Moran Street area. Note that weekday hotel trip generation is assumed to be half of weekend hotel trip generation. Trip generation by land use is presented in Appendix E of this report.

Table 12.3 – Project Trip Generation, Scenario 5 Weekday

Net Project Trips Future Weekday										
Zone		Quantity	Unit	Daily	AM Total	AM In	AM Out	PM Total	PM In	PM Out
1	Proposed Subtotal Zone 1	135.68	TSF	7,114	434	323	112	775	496	279
	Existing Subtotal Zone 1	135.68	TSF	6,404	214	121	92	568	278	290
	Net Project Vehicle Trips			**710**	**220**	**202**	**20**	**207**	**218**	**-11**
2	Proposed Subtotal Zone 2	158.00	TSF	8,027	762	380	382	769	438	332
	Existing Subtotal Zone 2	124.04	TSF	3,052	607	322	285	536	284	252
	Net Project Vehicle Trips			**4,975**	**155**	**58**	**97**	**233**	**154**	**80**
Total Net Proposed		**293.68**	**TSF**	**5,685**	**376**	**260**	**117**	**441**	**372**	**69**

Note 1: Internal trip capture reductions of 30% apply to restaurant trips, 10% to retail trips, and 5% to office trips

As shown in Table 12.3 the project will generate a total of 5,685 net daily trips on weekdays under Scenario 5, including 376 trips during the AM peak hour and 441 trips during the PM peak hour. On weekends, the project will generate 7,208 net daily trips, including 1,033 trips during the Mid-day peak hour, as shown in Table 12.4.

The Net Project Trips are the trip generation from the new project less the existing use trip generation and less internal trip capture. Internal trip capture consists of trips generated by a multi-use development that are attracted to other uses in the same development. For Scenario 5, an internal trip capture reduction of 30% applies to restaurant trips and 10% applies to retail trips. A 5% internal trip capture reduction applies to office trips. These rates are derived from ITE guidelines published in *Trip Generation*. For Scenario 6, an overall 20% internal capture rate is applied to Zone 1 by considering that all uses within Zone 1 will use the centralized parking structure. Internal capture for other areas is at the same rate as for Scenario 5.

Table 12.4 – Project Trip Generation, Scenario 5 Weekend

Net Project Trips Future Weekend							
Zone		**Quantity**	**Unit**	**Daily**	**MD Total**	**MD In**	**MD Out**
1	Proposed Subtotal Zone 1	135.68	TSF	9,740	1,297	868	429
	Existing Subtotal Zone 1	135.68	TSF	6,780	674	350	324
	Net Project Vehicle Trips			**2,960**	**623**	**518**	**105**
2	Proposed Subtotal Zone 2	158.00	TSF	7,975	1,156	625	527
	Existing Subtotal Zone 2	124.04	TSF	3,728	744	390	354
	Net Project Vehicle Trips			**4,248**	**410**	**236**	**174**
Total Net Proposed		**293.68**	**TSF**	**7,208**	**1,033**	**754**	**279**

Note 1: Internal trip capture reductions of 30% apply to restaurant trips, 10% to retail trips, and 5% to office trips

Under Scenario 6, the project will generate 5,436 net daily trips on weekdays, including 323 trips during the AM peak hour and 402 trips during the PM peak hour as shown in Table 12.5. On weekends, the project will generate 6,034 net daily trips under Scenario 6, including 813 trips during the Mid-day peak hour, as shown in Table 12.6.

Table 12.5 – Project Trip Generation, Scenario 6 Weekday

Net Project Trips Future Weekday										
Zone		**Quantity**	**Unit**	**Daily**	**AM Total**	**AM In**	**AM Out**	**PM Total**	**PM In**	**PM Out**
1	Proposed Subtotal Zone 1	205.67	TSF	10,678	761	466	294	1,012	620	392
	Existing Subtotal Zone 1	223.20	TSF	7,114	505	288	217	782	381	401
	Net Project Vehicle Trips			**3,564**	**256**	**178**	**77**	**230**	**239**	**-9**
2	Proposed Subtotal Zone 2	88.00	TSF	4,214	380	190	189	334	174	160
	Existing Subtotal Zone 2	46.02	TSF	2,342	313	154	159	162	76	86
	Net Project Vehicle Trips			**1,872**	**67**	**36**	**30**	**172**	**98**	**74**
Total Net Proposed		**293.67**	**TSF**	**5,436**	**323**	**215**	**108**	**402**	**337**	**65**

Note 1: Internal trip capture reductions of 20% apply to Zone 2. Internal capture for other zones is the same as for Scenario 5.

Under Scenario 6, most of the project area parking supply is concentrated in one or more centralized parking facilities. For purposes of trip distribution, the square footage and trip generation totals shown for Zones 1 and 2 (Asian Garden Mall and Moran Street, respectively) are therefore allocated to the locations of the parking supply associated with the trip-generating land uses, rather than the locations of the land uses themselves.

Table 12.6 – Project Trip Generation, Scenario 6 Weekend

Net Project Trips Future Weekend							
Zone		**Quantity**	**Unit**	**Daily**	**MD Total**	**MD In**	**MD Out**
1	Proposed Subtotal Zone 1	205.67	TSF	13,270	1,818	1,219	687
	Existing Subtotal Zone 1	223.20	TSF	8,929	1,100	583	517
	Net Project Vehicle Trips			**4,341**	**718**	**636**	**170**
2	Proposed Subtotal Zone 2	88.00	TSF	3,891	519	279	238
	Existing Subtotal Zone 2	46.02	TSF	2,199	424	213	210
	Net Project Vehicle Trips			**1,692**	**95**	**66**	**28**
Total Net Proposed		**293.67**	**TSF**	**6,034**	**813**	**702**	**199**

Note 1: Internal trip capture reductions of 20% apply to Zone 2. Internal capture for other zones is the same as for Scenario 5.

Detailed trip generation calculations by land use are provided in Appendix E of this report.

12.4 Project Trip Distribution

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by project traffic. The potential interaction between the proposed land use and surrounding regional access routes are considered to identify the route where the project traffic will distribute. Internal circulation considerations, traffic control, and locations of parking facilities may also affect trip distribution, particularly as it affects streets and intersections in the immediate vicinity of the project. For the purposes of trip distribution the project site was divided into two subareas as described in Section 2 of this report. Scenarios 5 and 6 have unique trip distribution patterns to and from the two subareas as described in the following sections.

12.4.1 Scenario 5 Trip Distribution

For Scenario 5, all trips to/from Subarea 1 (Asian Garden Mall) generally access the project site via the Asian Garden Mall Drive Aisle (either off Bolsa Avenue or Bishop Place). However some trips to/from Subarea 1 access the site via Moran Street due to internal circulation considerations. Trips to/from Subarea 2 (Saigon Villas and mixed use developments on Moran Street) access the project site via Moran Street.

Trip distribution for the 2 subareas and the 2 scenarios is generally the same beyond the intersections adjacent to the project site. This general distribution pattern for Scenario 5 is shown for inbound trips in Figure 12.1, and for outbound trips in Figure 12.2. Figures 12.3, 12.4, and 12.5 represent the Scenario 5 Weekday AM, Weekday PM, and Weekend Mid-day peak hour volumes of project-related traffic increases less the trip credits, respectively. For Scenario 5, future traffic levels in the project vicinity are expected to be changed by the volumes of project traffic shown on these figures.

Figures 12.6, 12.7, and 12.8 represent the project area total trip circulation for Scenario 5 during the Weekday AM and PM, and Weekend MD peak hours, respectively.

12.4.2 Scenario 6 Trip Distribution

Under Scenario 6, all residential trips to/from Subarea 1 access the project site via Moran Street. However, commercial trips to/from Subarea 1 access the project site via either the Asian Garden Mall Drive Aisle or Moran Street, and proceed to the proposed mall parking structure. All trips to/from Subarea 2 (Asian Garden Mall) continue to access the project site via either the Asian Garden Mall Drive Aisle (either off Bolsa Avenue or Bishop Place), or via Moran Street. Residential trips to/from Subarea 2 (Saigon Villas and mixed use developments on Moran Street) continue to access the project site via Moran Street, however commercial and office trips are routed to the proposed mall parking structure. These trips can access the site via either the Asian Garden Mall Drive Aisle or Moran Street.

The general distribution pattern for Scenario 6 is shown for inbound trips in Figure 12.9, and for outbound trips in Figure 12.10. Figures 12.11, 12.12, and 12.13 represent the Scenario 6 Weekday AM, Weekday PM, and Weekend Mid-day Peak hour volumes of project-related traffic increases less the trip credits, respectively. For Scenario 6, future traffic levels in the project vicinity are expected to be changed by the volumes of project traffic shown on these figures.

Figures 12.14, 12.15, and 12.16 represent the project area total trip circulation for Scenario 6 during the Weekday AM and PM, and Weekend MD peak hours, respectively.

It should be noted that the analysis of proposed project traffic results in an increase in the number of study intersections from 22 to 24 due to the addition of three new intersections in the Comprehensive Plan area.

Specific trip distribution patterns for the two subareas under Scenario 5 and Scenario 6 are shown in Appendix E of this report.

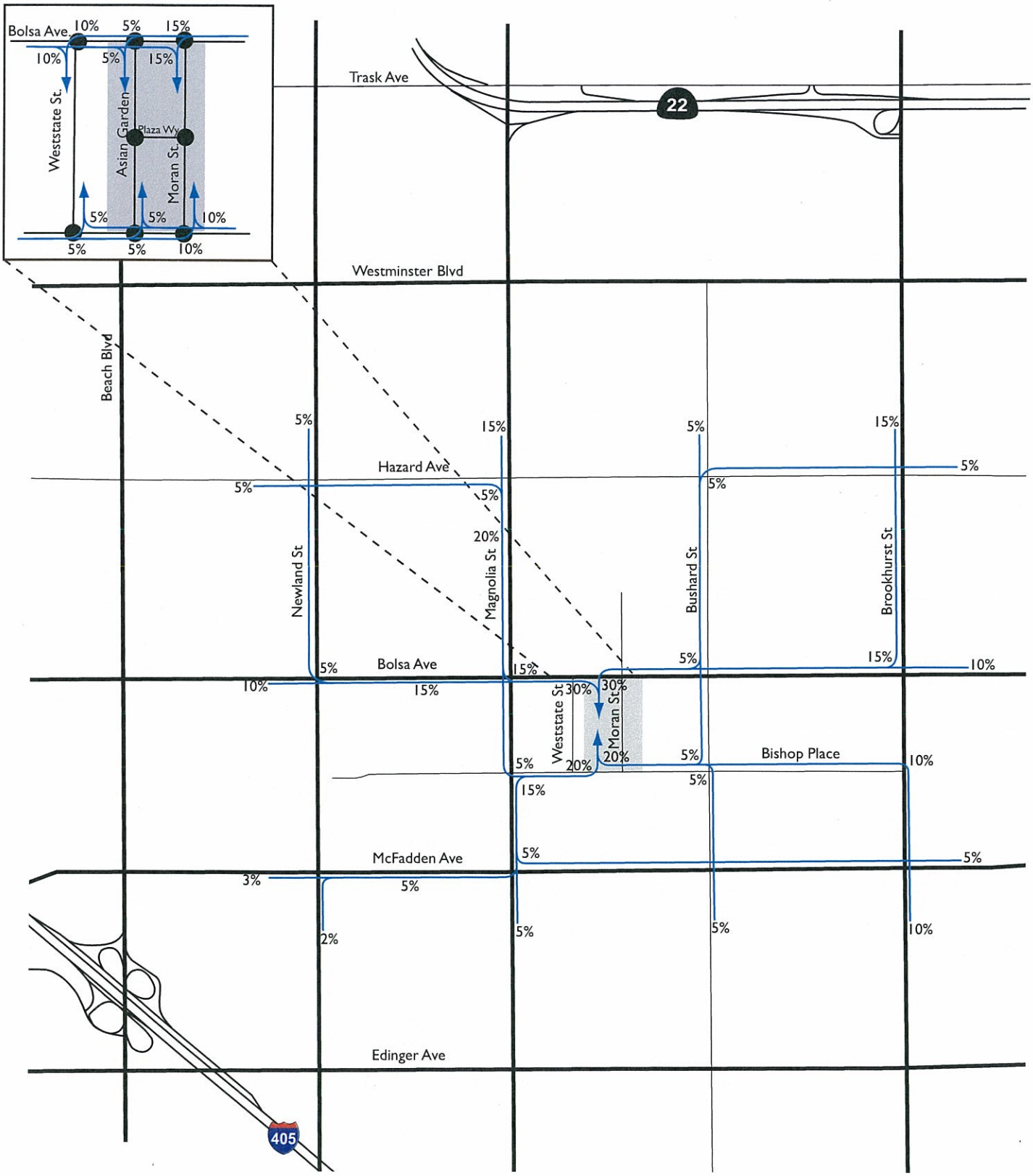

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Figure 12.1

Moran St/Weststate St (Little Saigon) TIS & Parking Study

Project Trip Distribution, Inbound, Scenario 5

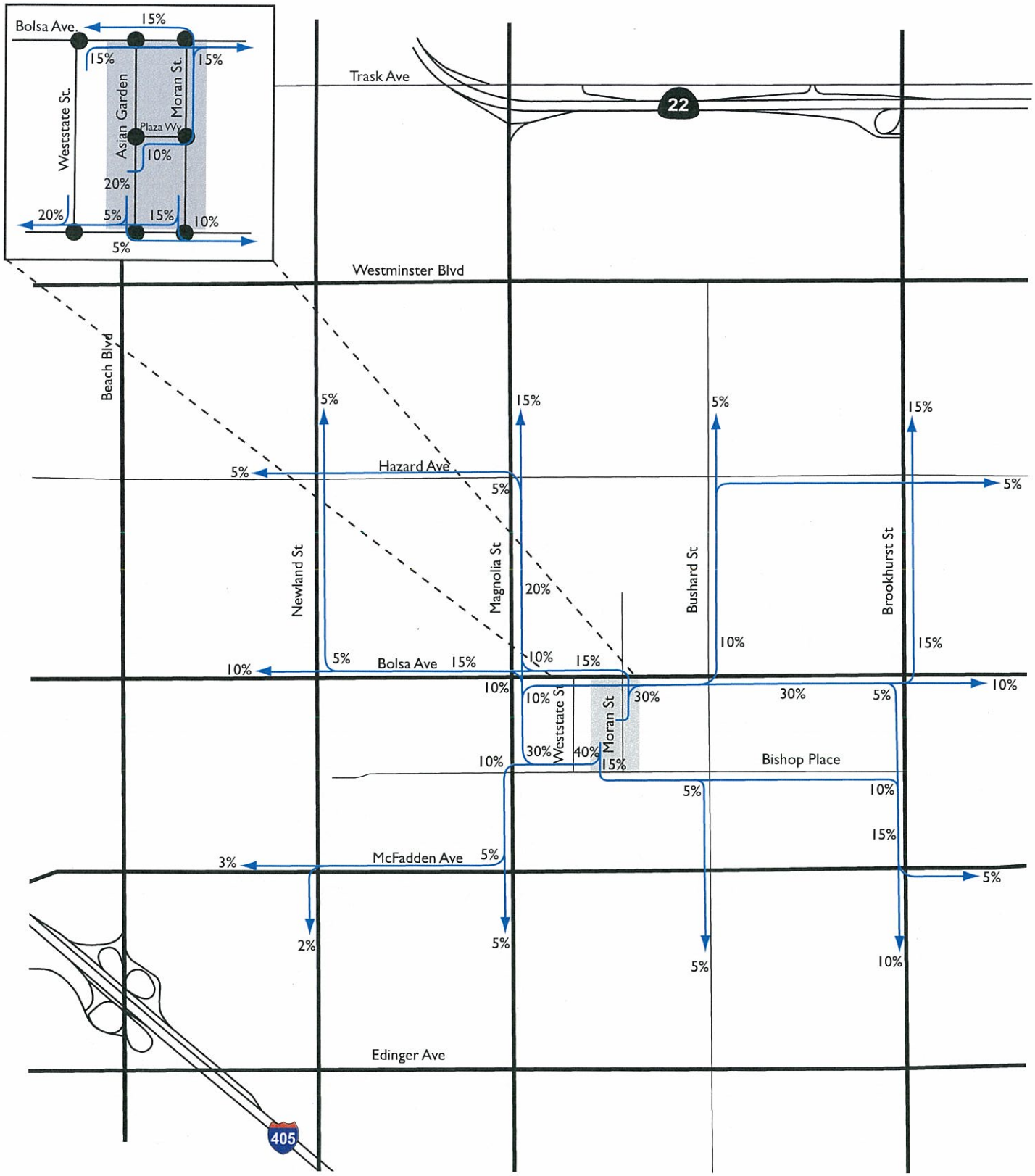

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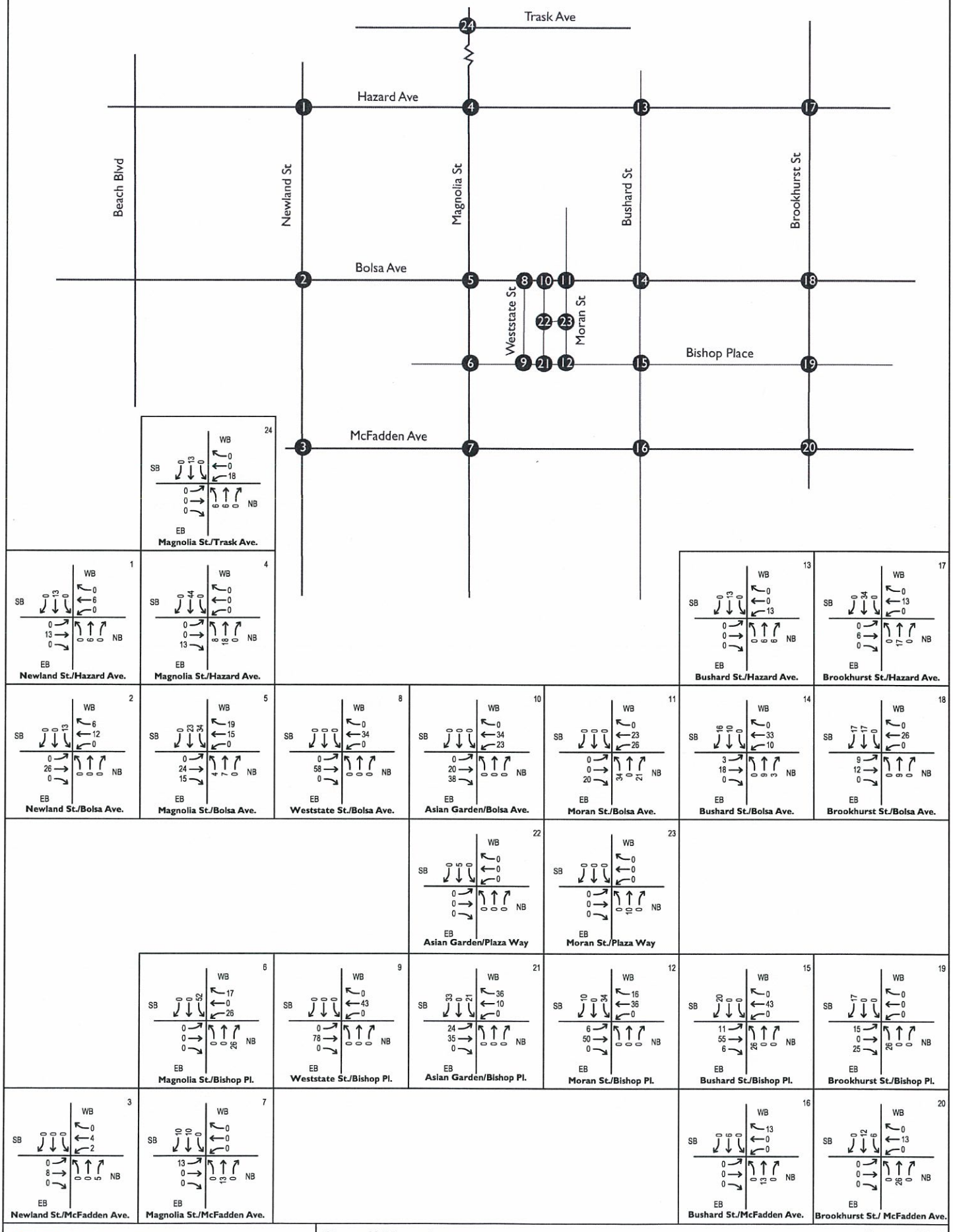
Figure 12.2

Moran St/Weststate St (Little Saigon) TIS & Parking Study

Project Trip Distribution, Outbound, Scenario 5



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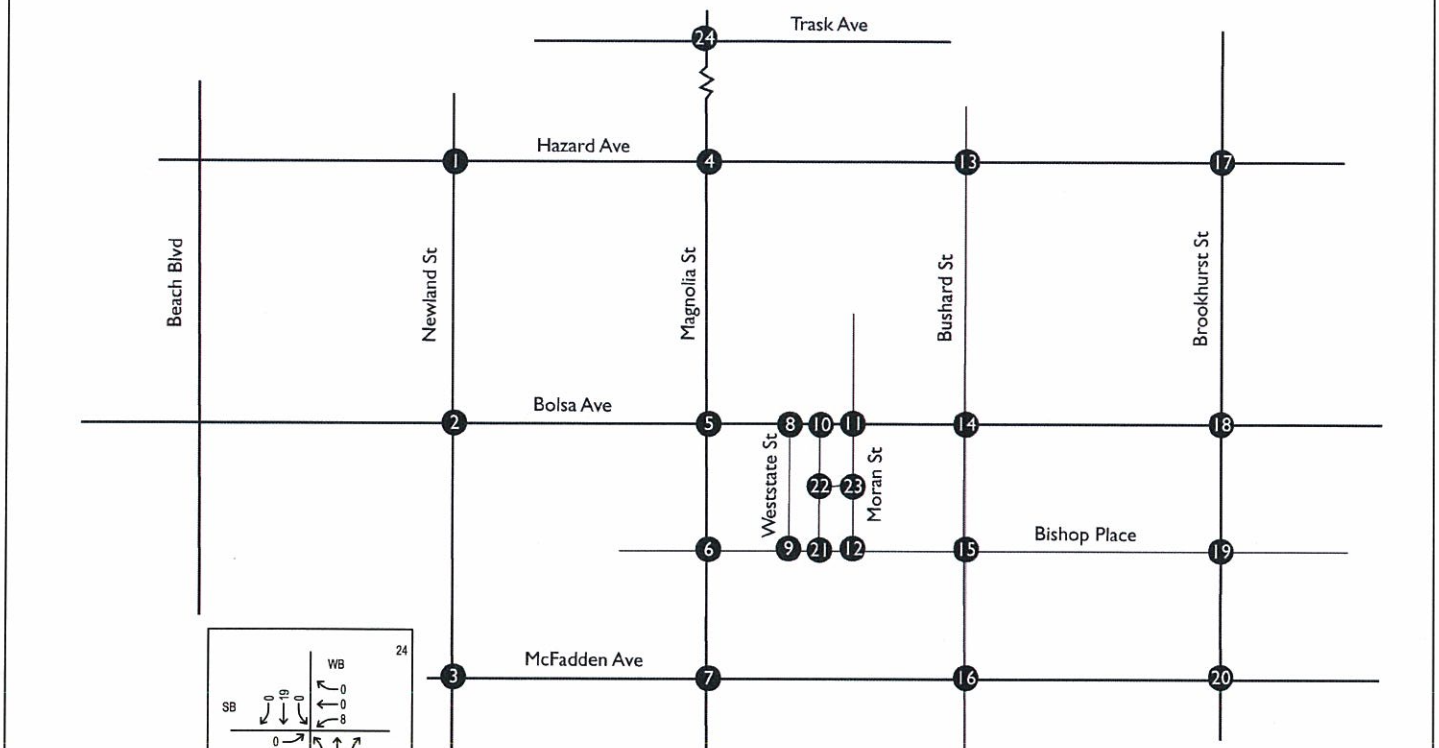
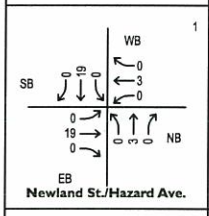
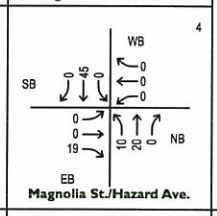
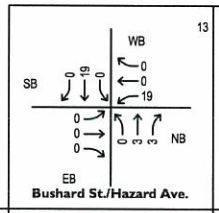
City of Westminster — Figure 12.3

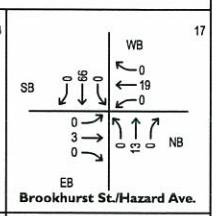
Little Saigon Traffic & Parking Study — Project Related Traffic Volumes - Weekday AM Peak Hour, Scenario 5

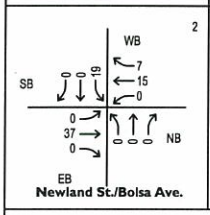


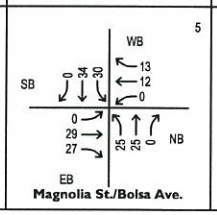


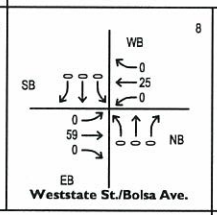


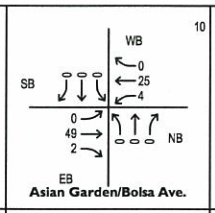


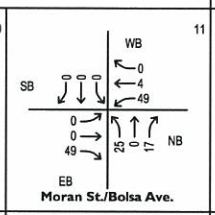


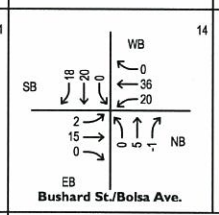


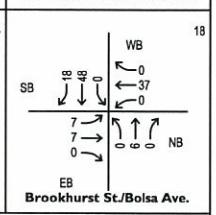


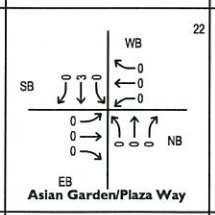


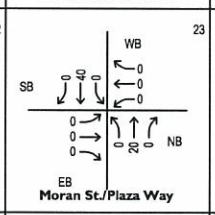


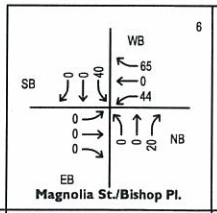


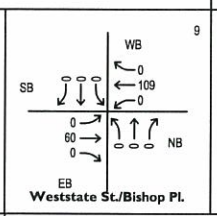


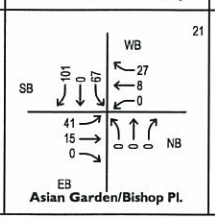


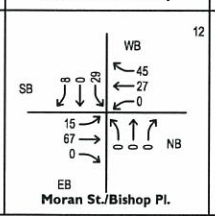


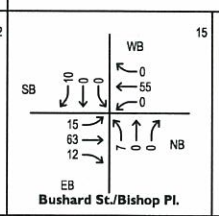


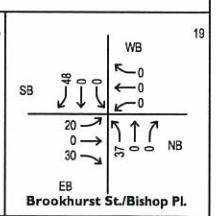


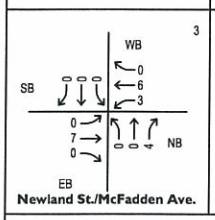


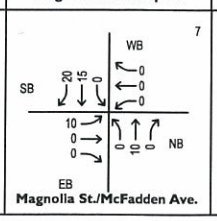


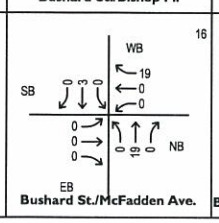












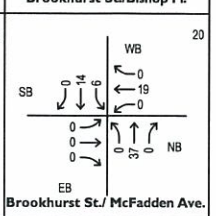


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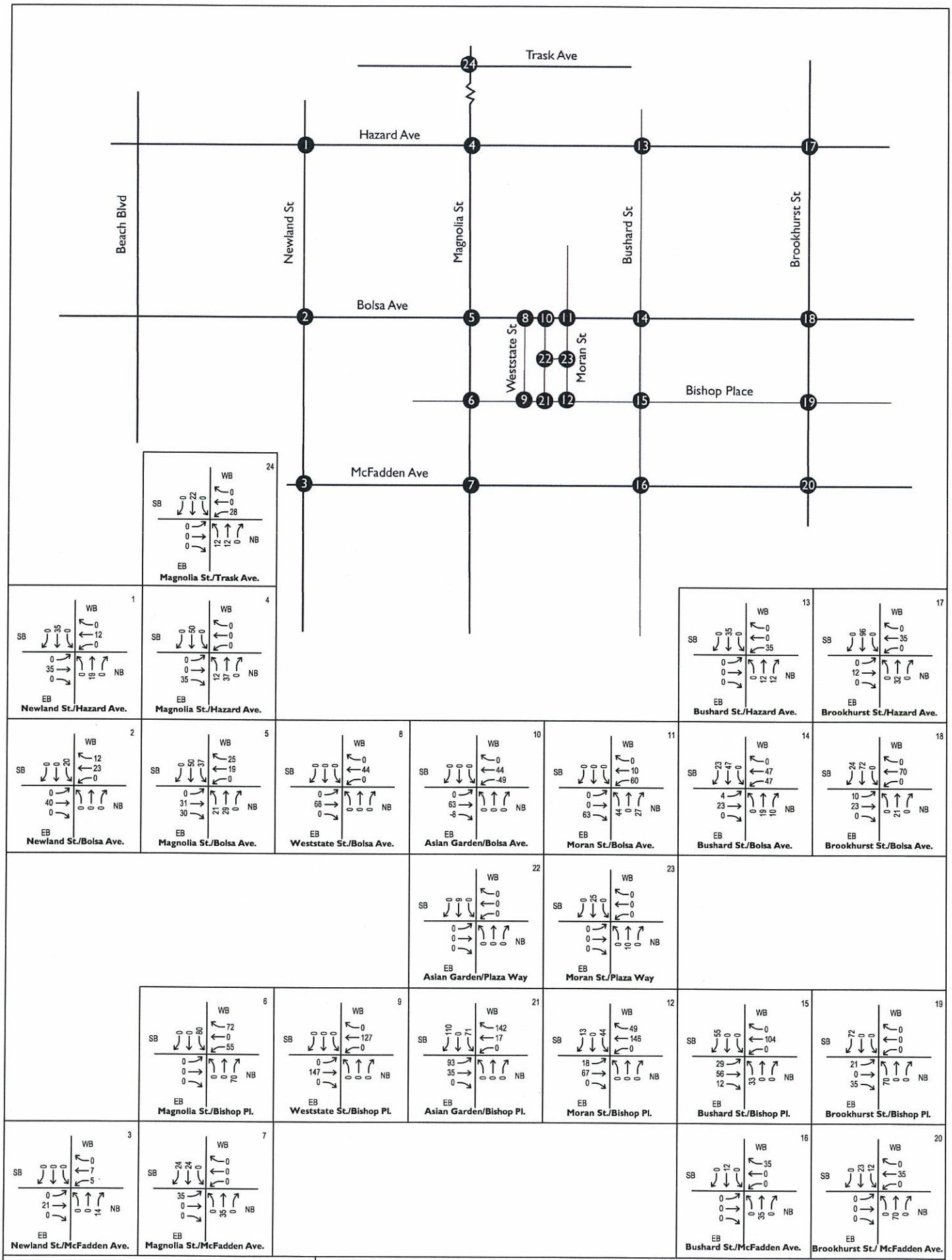
Figure 12.4

Little Saigon Traffic & Parking Study

Project Related Traffic Volumes - Weekday PM Peak Hour, Scenario 5



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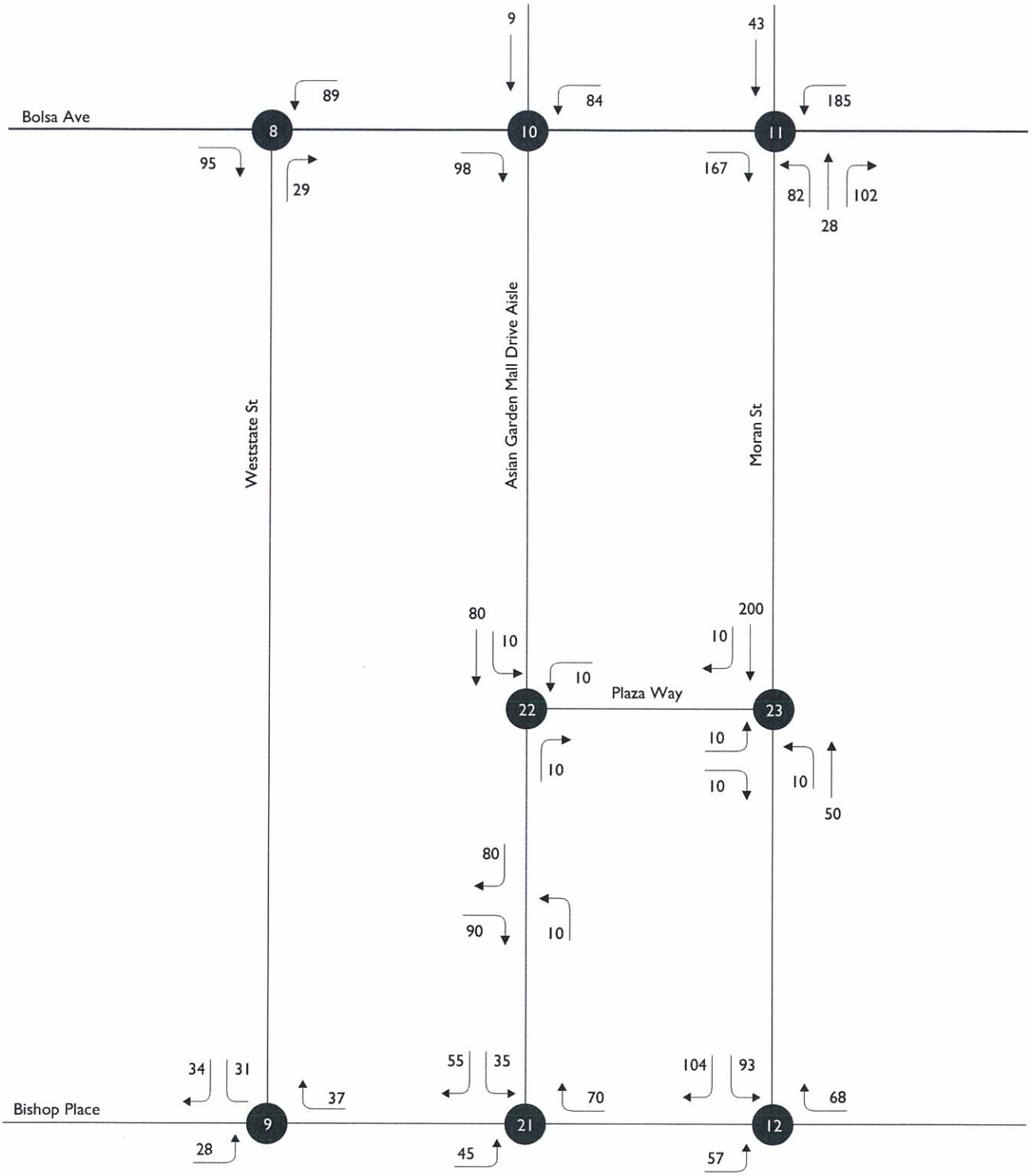
City of Westminster — Figure 12.5

Little Saigon Traffic & Parking Study — Project Related Traffic Volumes - Weekend (Saturday MD) Peak Hour, Scenario 5



LEGEND

- # — Study Intersection
- XX — Traffic Volume

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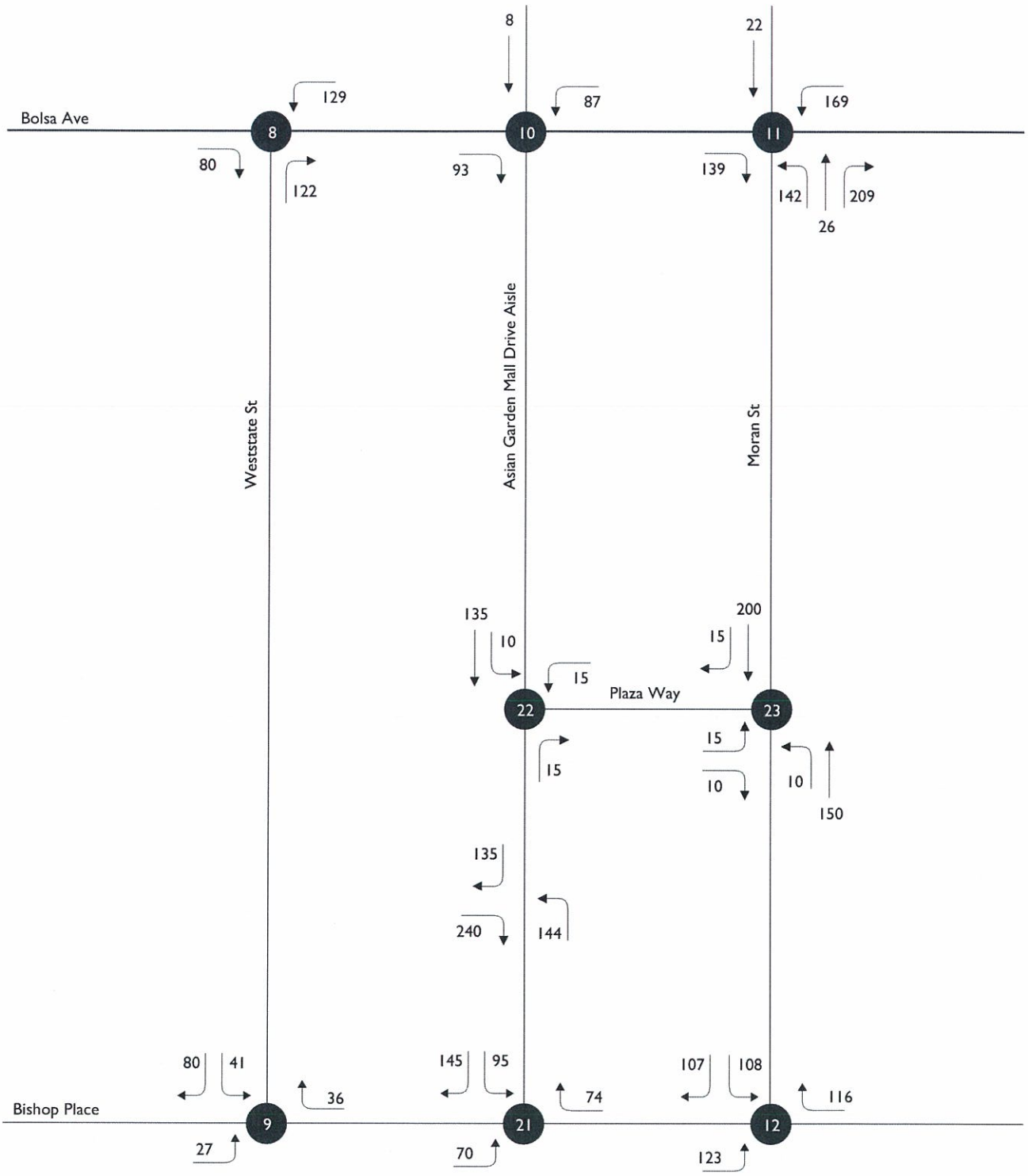
Little Saigon Traffic Impact and Parking Study — Project Area Trip Circulation, Scenario 5 Weekday AM



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- # — Study Intersection
- XX — Traffic Volume

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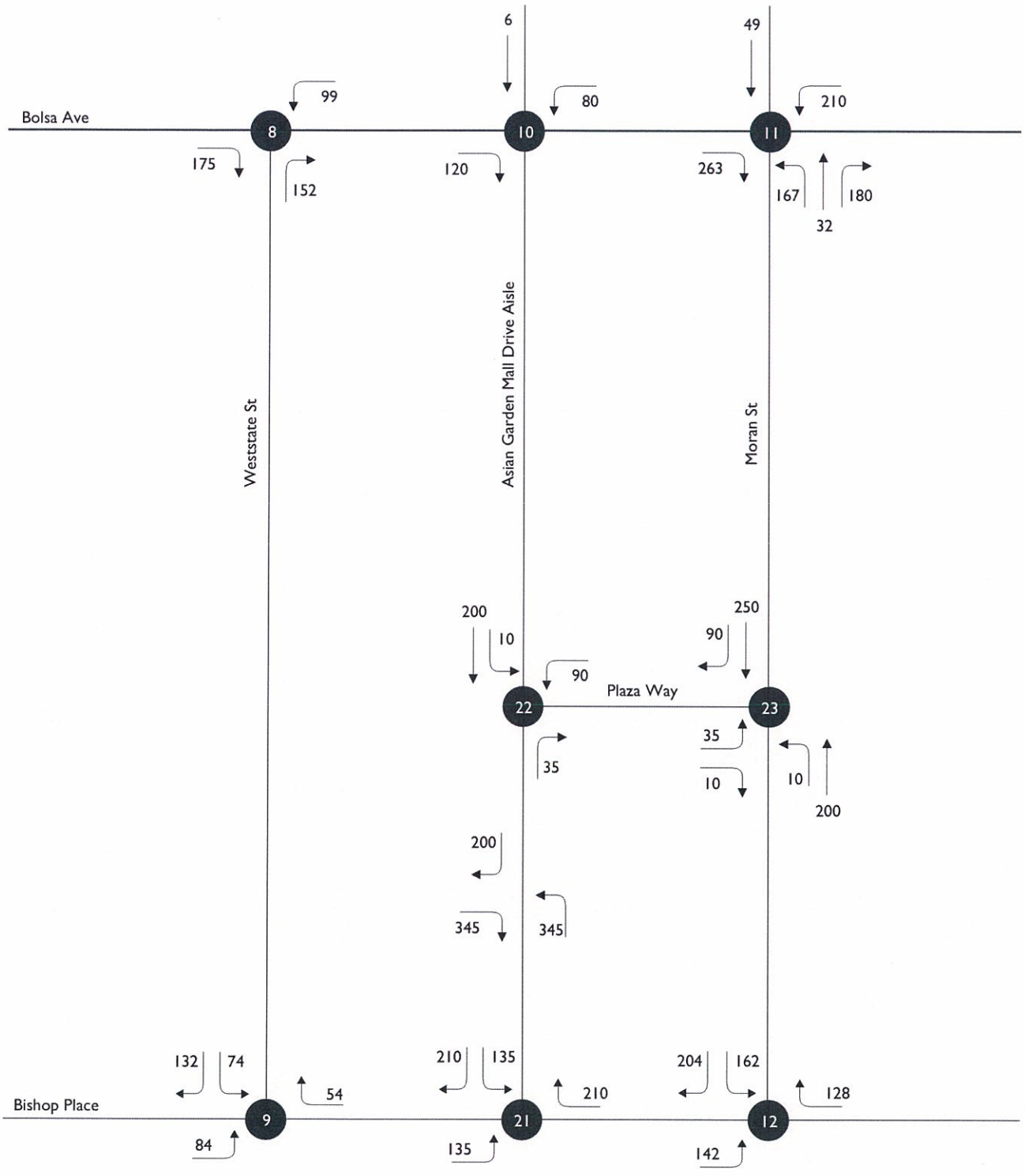
Little Saigon Traffic Impact and Parking Study — Project Area Trip Circulation, Scenario 5 Weekday PM



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- # — Study Intersection
- XX — Traffic Volume

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City of Westminster — Figure 12.8

Little Saigon Traffic Impact and Parking Study — Project Area Trip Circulation, Scenario 5 Weekend

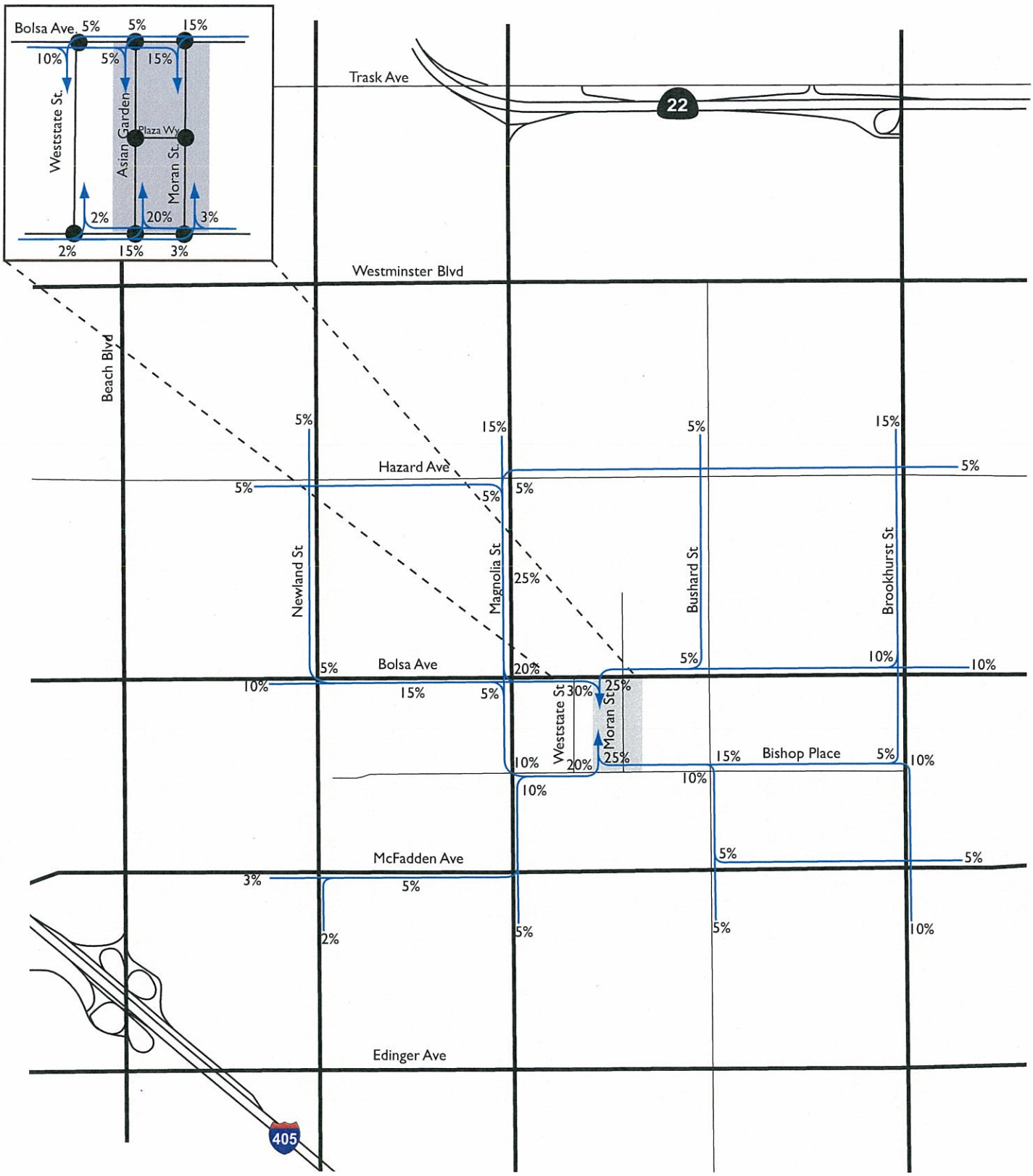

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Figure 12.9

Moran St/Weststate St (Little Saigon) TIS & Parking Study

Project Trip Distribution, Inbound, Scenario 6

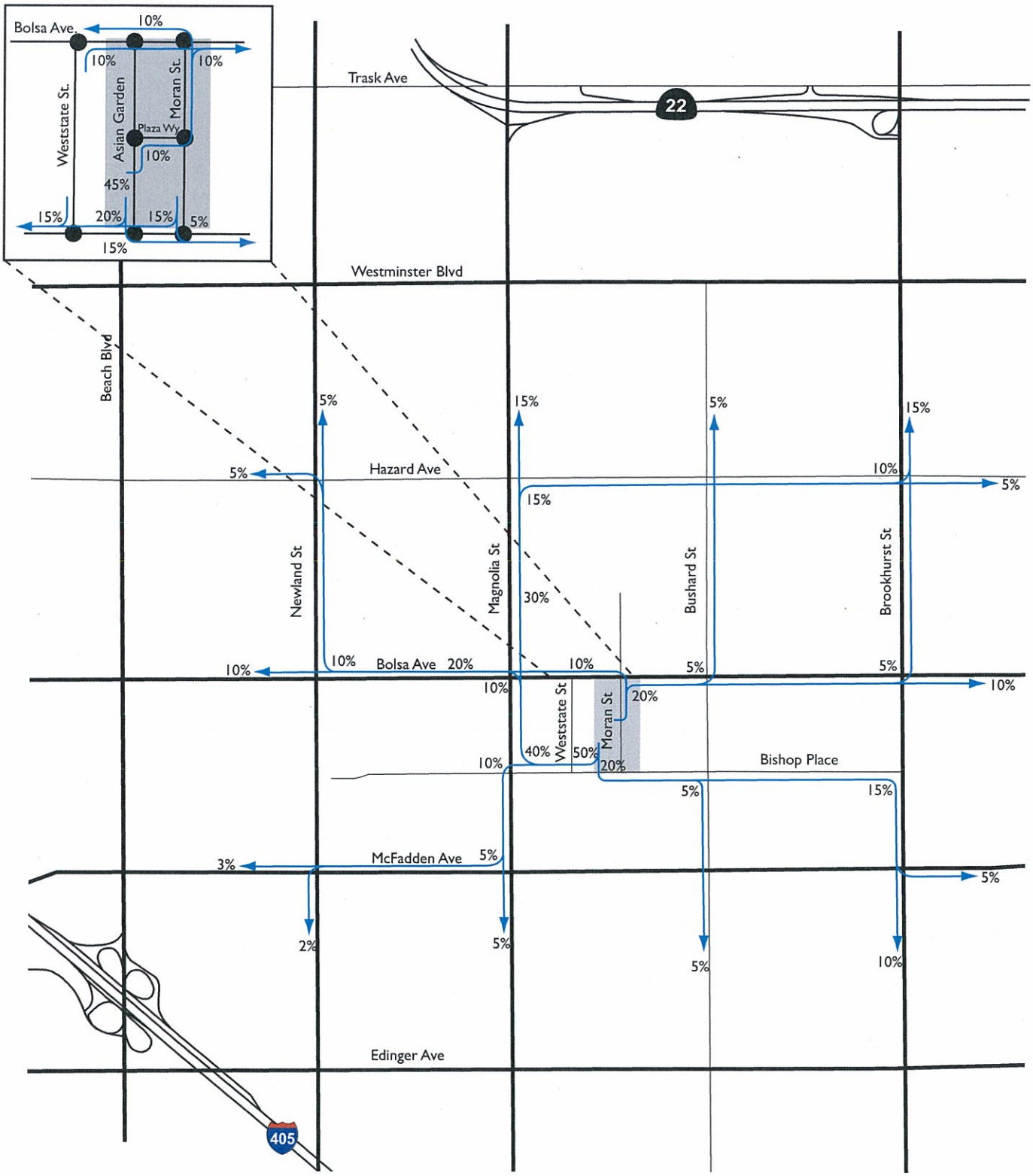

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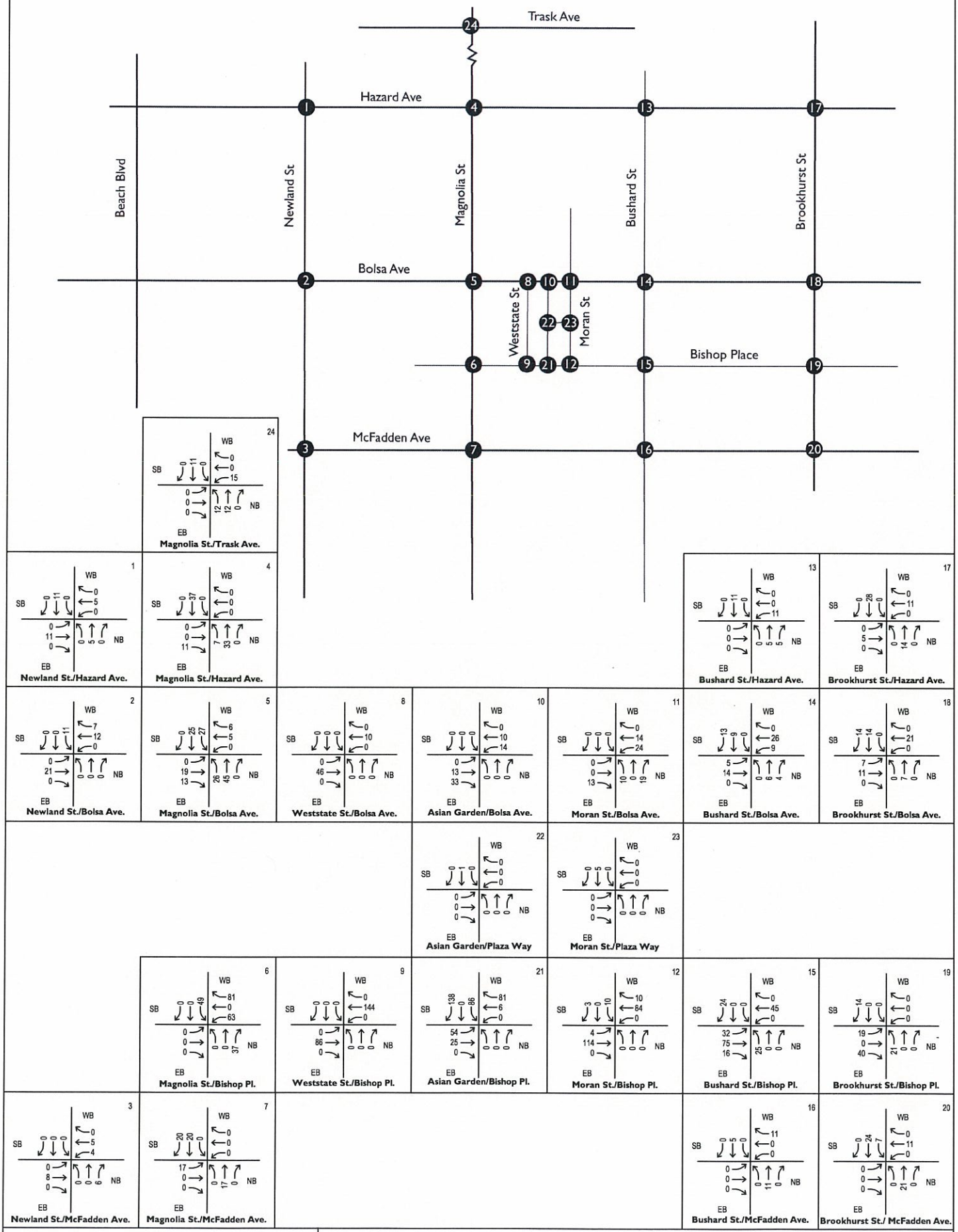
Figure 12.10

Moran St/Weststate St (Little Saigon) TIS & Parking Study

Project Trip Distribution, Outbound, Scenario 6



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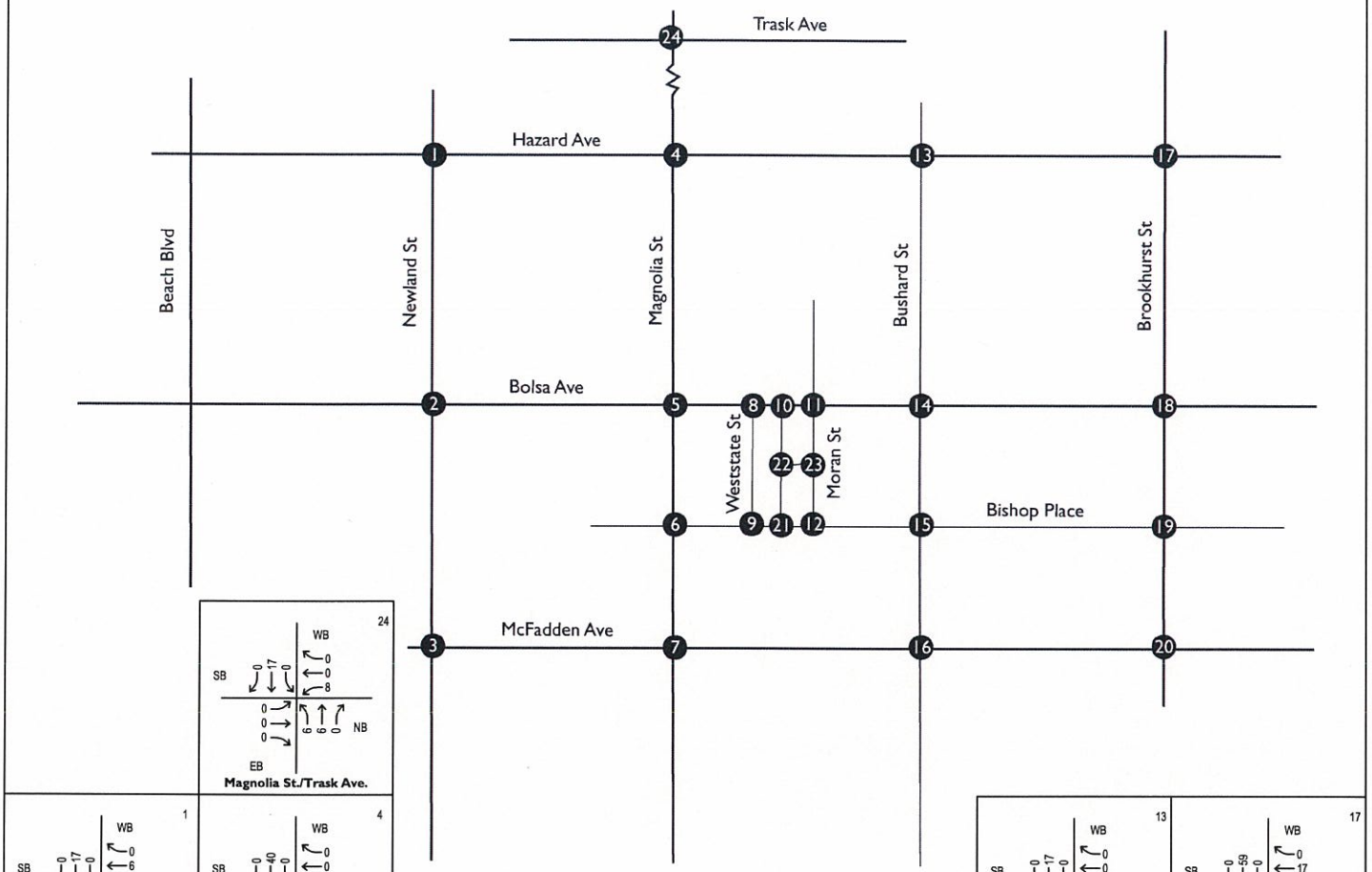
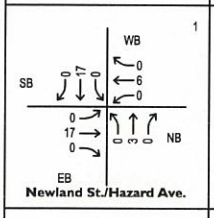
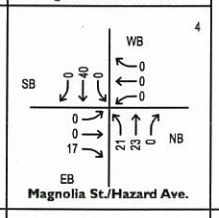
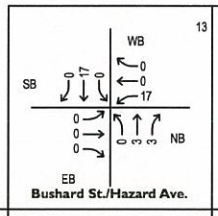
City of Westminster — Figure 12.11

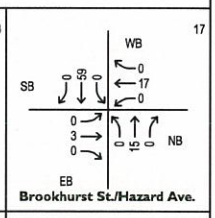
Little Saigon Traffic & Parking Study — Project Related Traffic Volumes - Weekday AM Peak Hour, Scenario 6

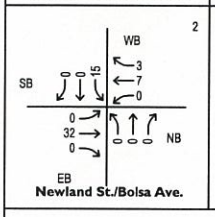


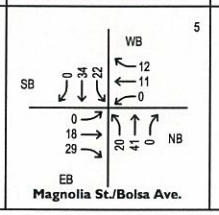


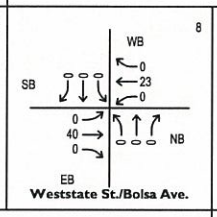


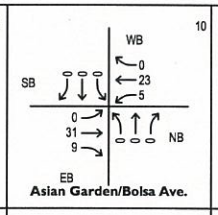


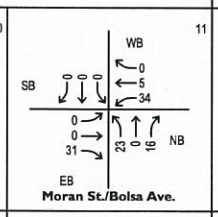


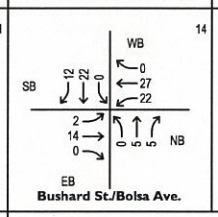


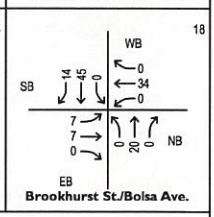


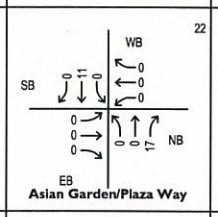


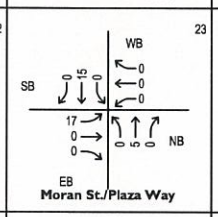


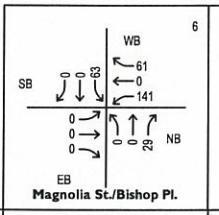


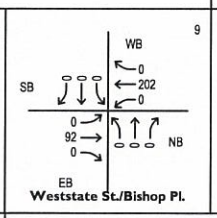


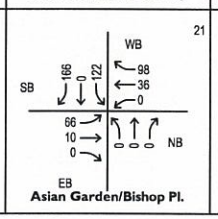


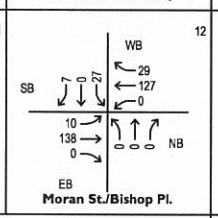


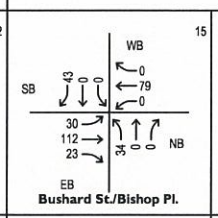


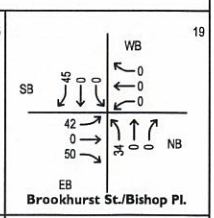


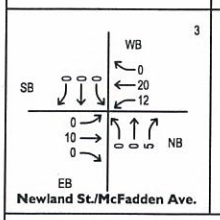


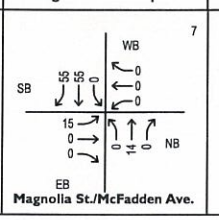


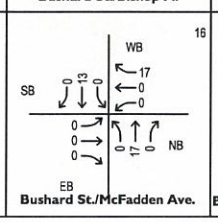












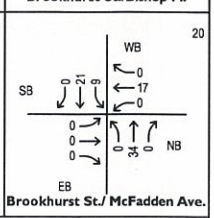


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Figure 12.12

Little Saigon Traffic & Parking Study

Project Related Traffic Volumes - Weekday PM Peak Hour, Scenario 6

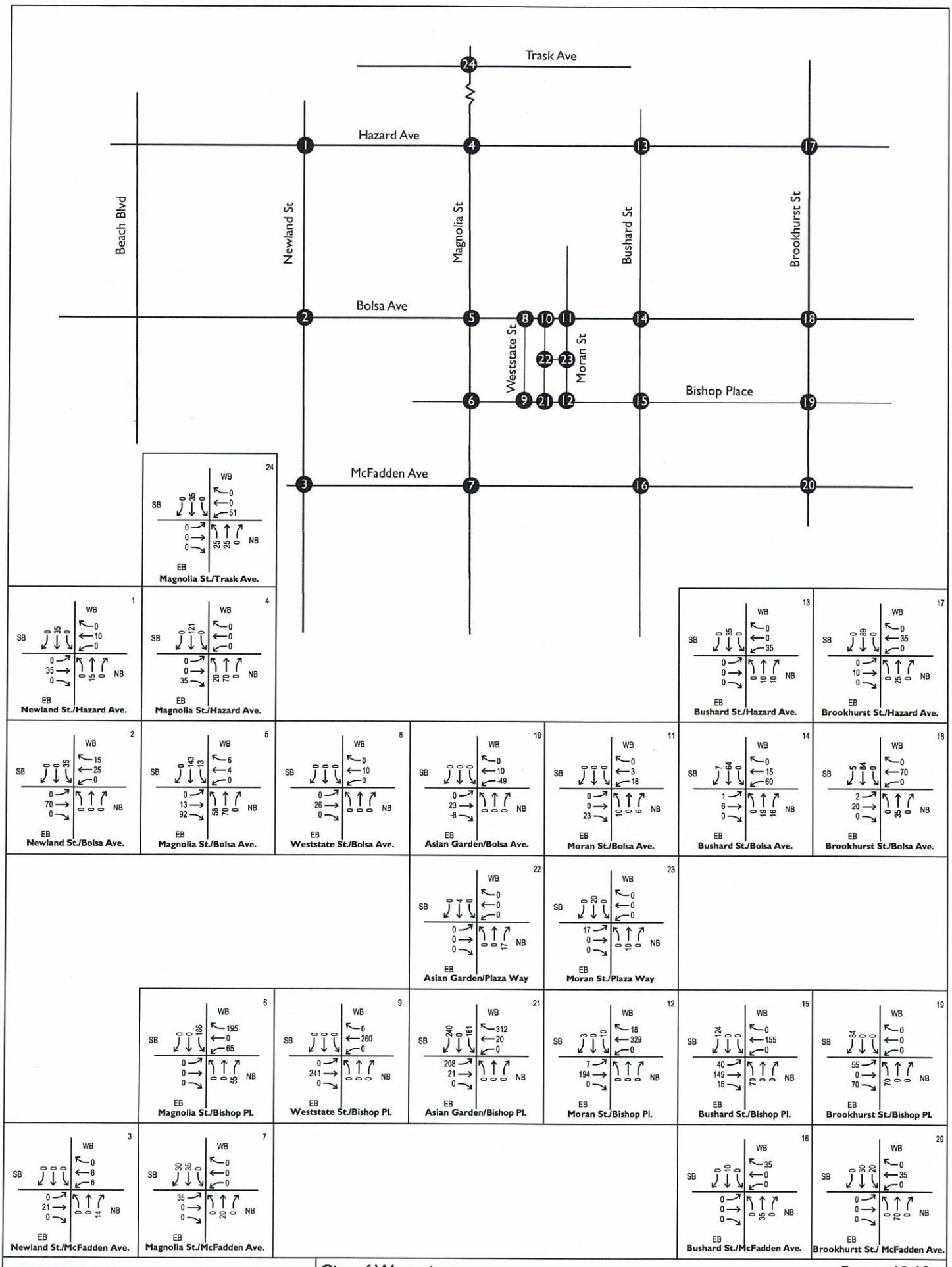

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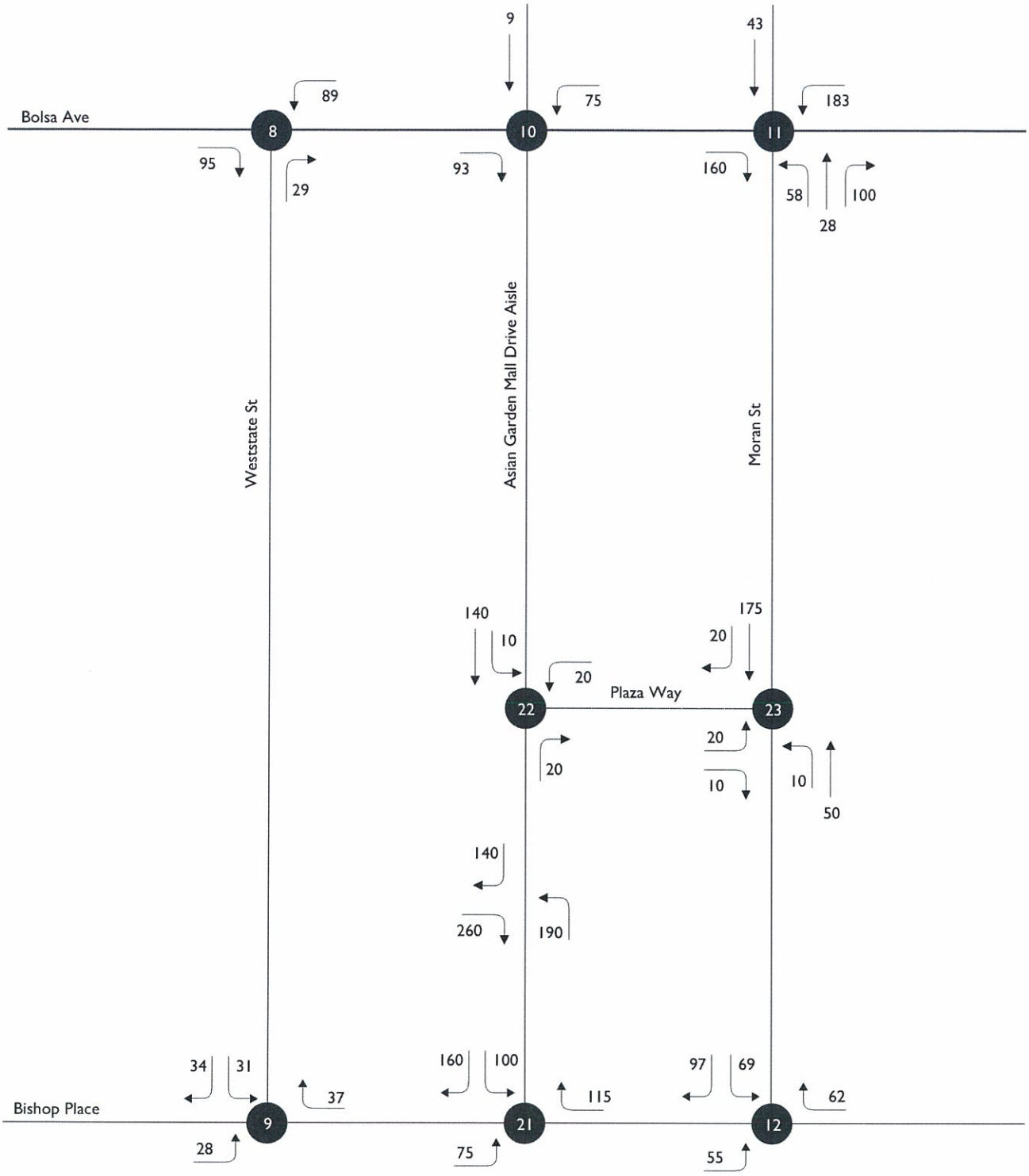
Figure 12.13

Little Saigon Traffic & Parking Study

Project Related Traffic Volumes - Weekend (Saturday MD) Peak Hour, Scenario 6



LEGEND

Study Intersection

XX Traffic Volume

N

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Figure 12.14

Little Saigon Traffic Impact and Parking Study

Project Area Trip Circulation, Scenario 6 Weekday AM

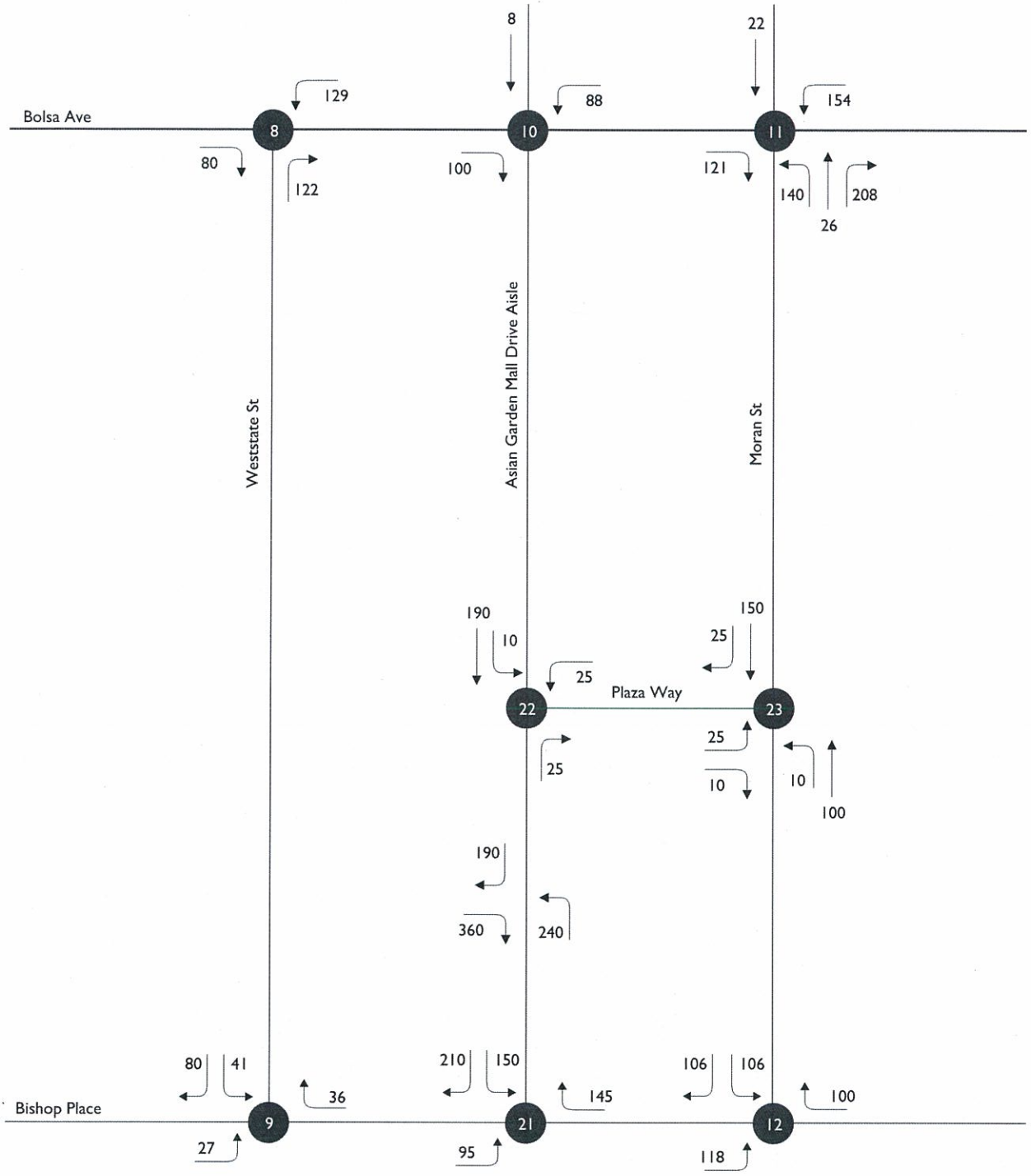

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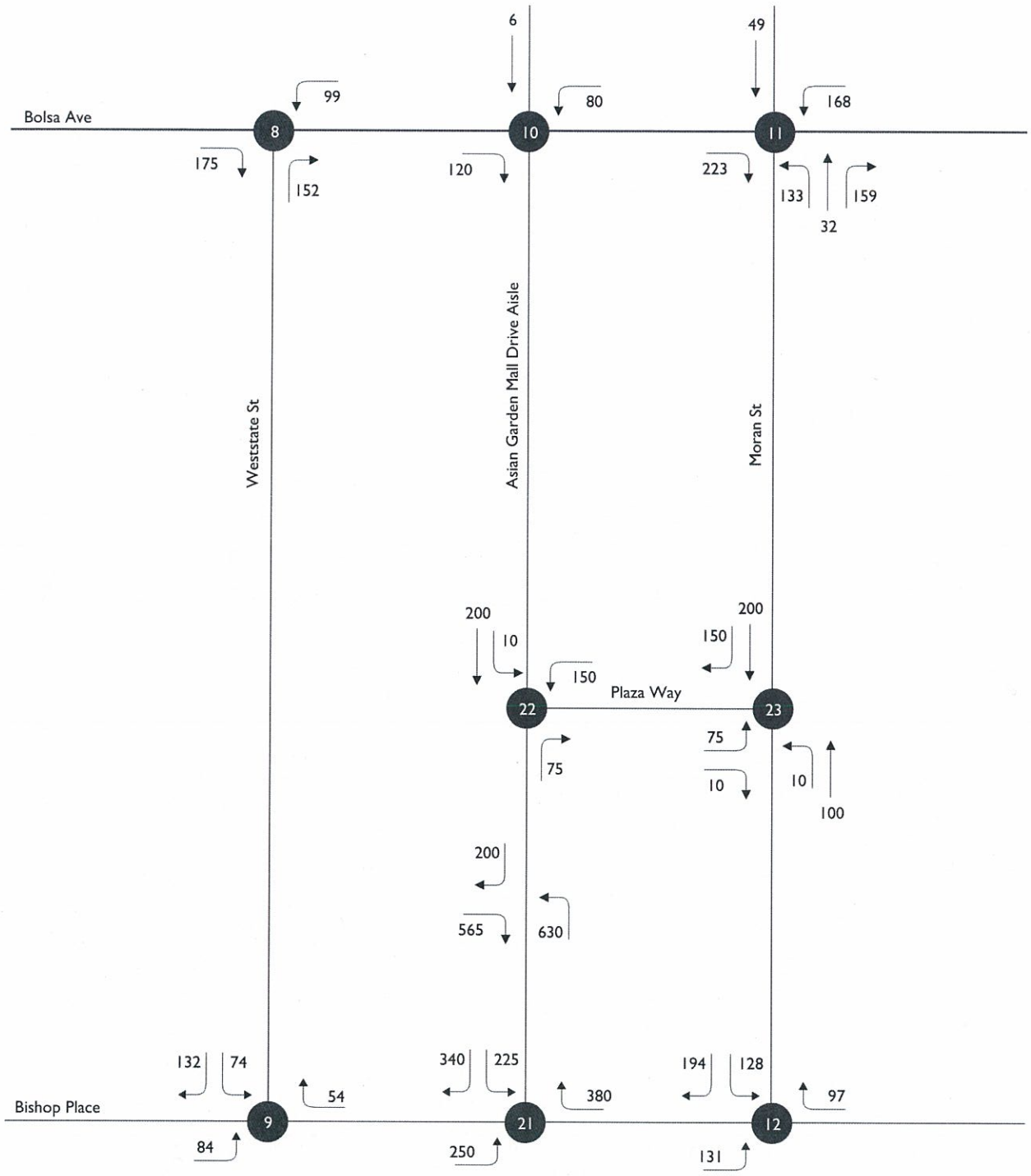
Figure 12.15

Little Saigon Traffic Impact and Parking Study

Project Area Trip Circulation, Scenario 6 Weekday PM



LEGEND

- # — Study Intersection
- XX — Traffic Volume

N

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Little Saigon Traffic Impact and Parking Study — Project Area Trip Circulation, Scenario 6 Weekend

13. Year 2030 Buildout Traffic Conditions With Project

This section documents the Year 2030 Buildout traffic conditions with the addition of Comprehensive Plan project-related traffic to the surrounding street system. Buildout with project traffic includes "background" traffic developed from the OCTAM Year 2030 traffic model, and adds project traffic to the ambient traffic growth. It evaluates Year 2030 buildout traffic conditions in the study area with traffic from the proposed project added.

Buildout With Project intersection geometry is shown in Figure 13.1 for relevant intersections in the study area.

13.1 Peak Hour Intersection Level of Service

13.1.1 Scenario 5

Figures 13.2 and 13.3 illustrate the Year 2030 Buildout With Project AM and PM peak hour traffic volumes, respectively, for Scenario 5. Figure 13.4 illustrates the Year 2030 Buildout With Project Weekend mid-day peak hour traffic volumes for Scenario 5.

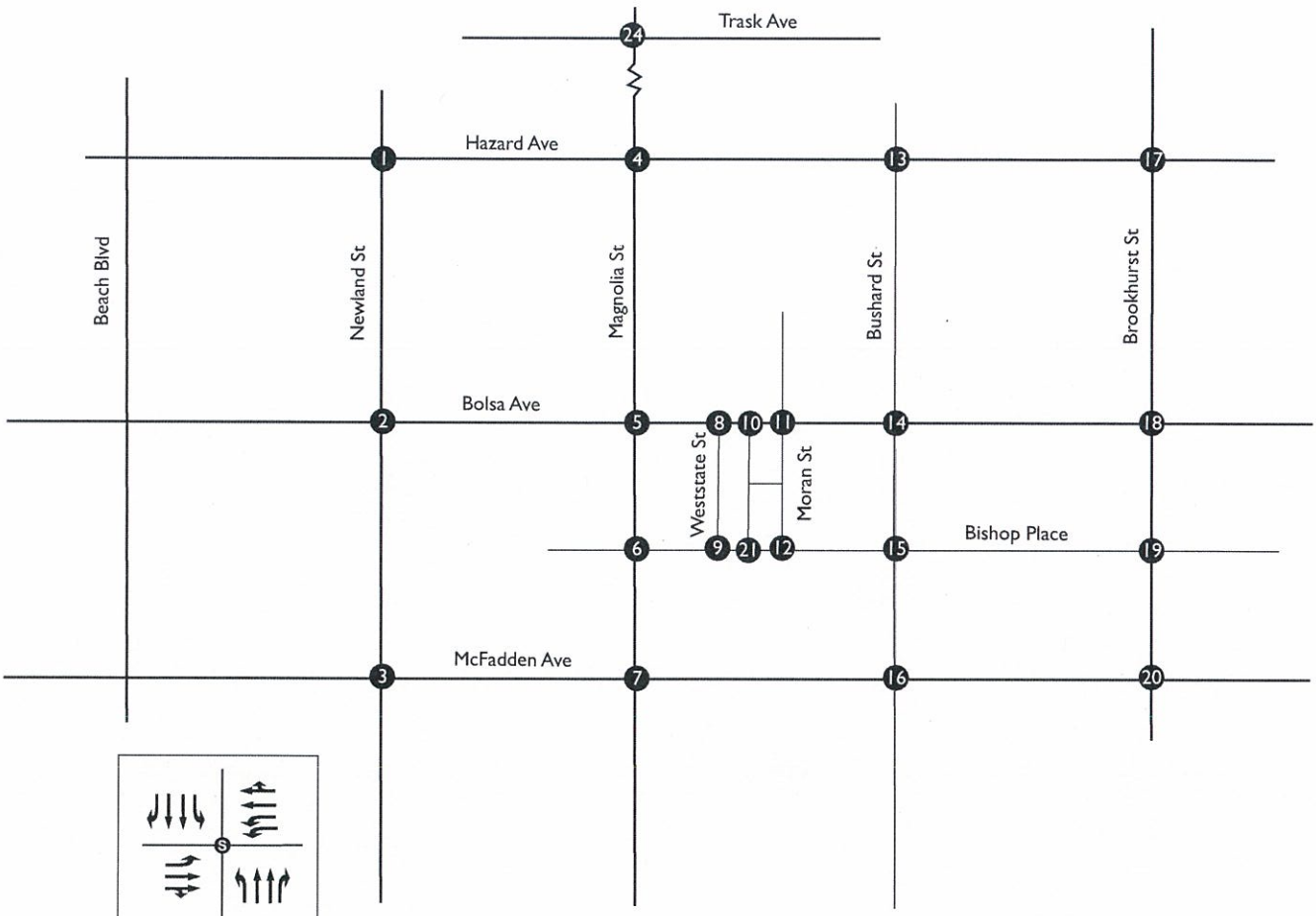
Table 13.1 summarizes the results of the level of service analyses for Scenario 5, Weekday AM and PM, and Table 13.2 summarizes the results of the level of service analyses for the Scenario 5 Weekend Mid-day time period. As shown in the tables, traffic conditions at 16 of the 22 study intersections will remain at Level of Service D or better in the peak hours while 6 of the 22 intersections will operate at Level of Service E or F during one or more peak hours with the addition of project-related traffic.

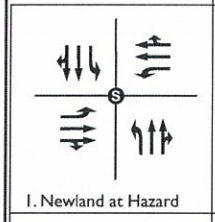
It should be noted that improvements are assumed at the intersections of Bishop Place/Moran Street and Bishop Place/Asian Garden as part of the Comprehensive Plan project.

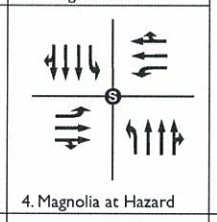
13.1.2 Scenario 6

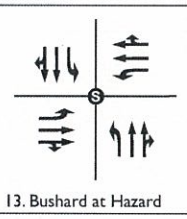
Figures 13.5 and 13.6 illustrate the Year 2030 Buildout With Project AM and PM peak hour traffic volumes, respectively, for Scenario 6. Figure 13.7 illustrates the Year 2030 Buildout With Project Weekend mid-day peak hour traffic volumes for Scenario 6.

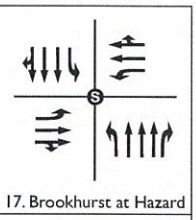
Table 13.3 summarizes the results of the level of service analyses for Scenario 6, Weekday AM and PM, and Table 13.4 summarizes the results of the level of service analyses for the Scenario 6 Weekend Mid-day time period. The level of service analyses for Scenario 6 determined that Level of service will remain at Level D or better for 16 of the 22 study intersections. Six of the study intersections were determined to be operating deficiently with project traffic included in the AM, PM, and/or Weekend peak hours.

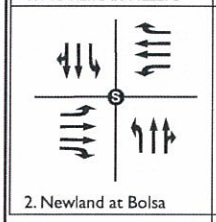


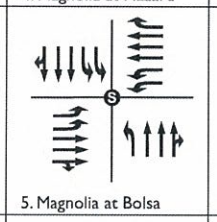


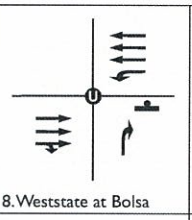


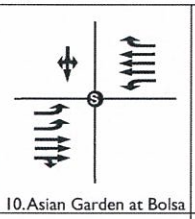


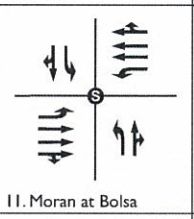


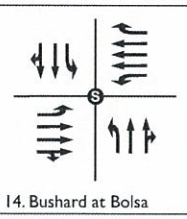


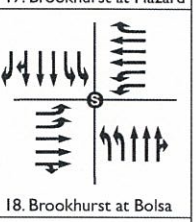


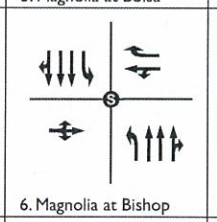


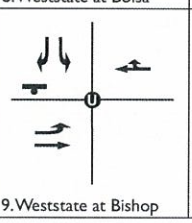


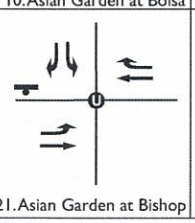


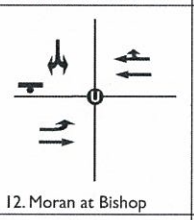


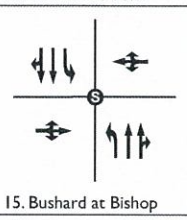


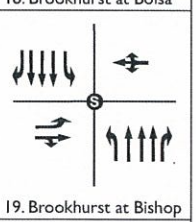


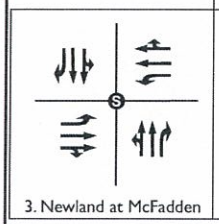


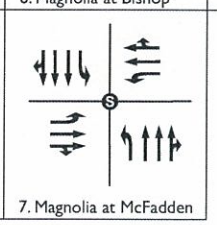


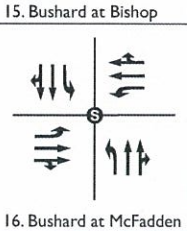


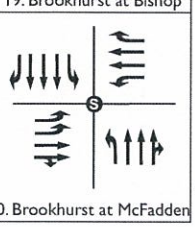












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KOA CORPORATION
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City of Westminster — Figure 13.1

Moran St/Weststate St (Little Saigon) TIS & Parking Study — Buildout With Project Lane Geometry

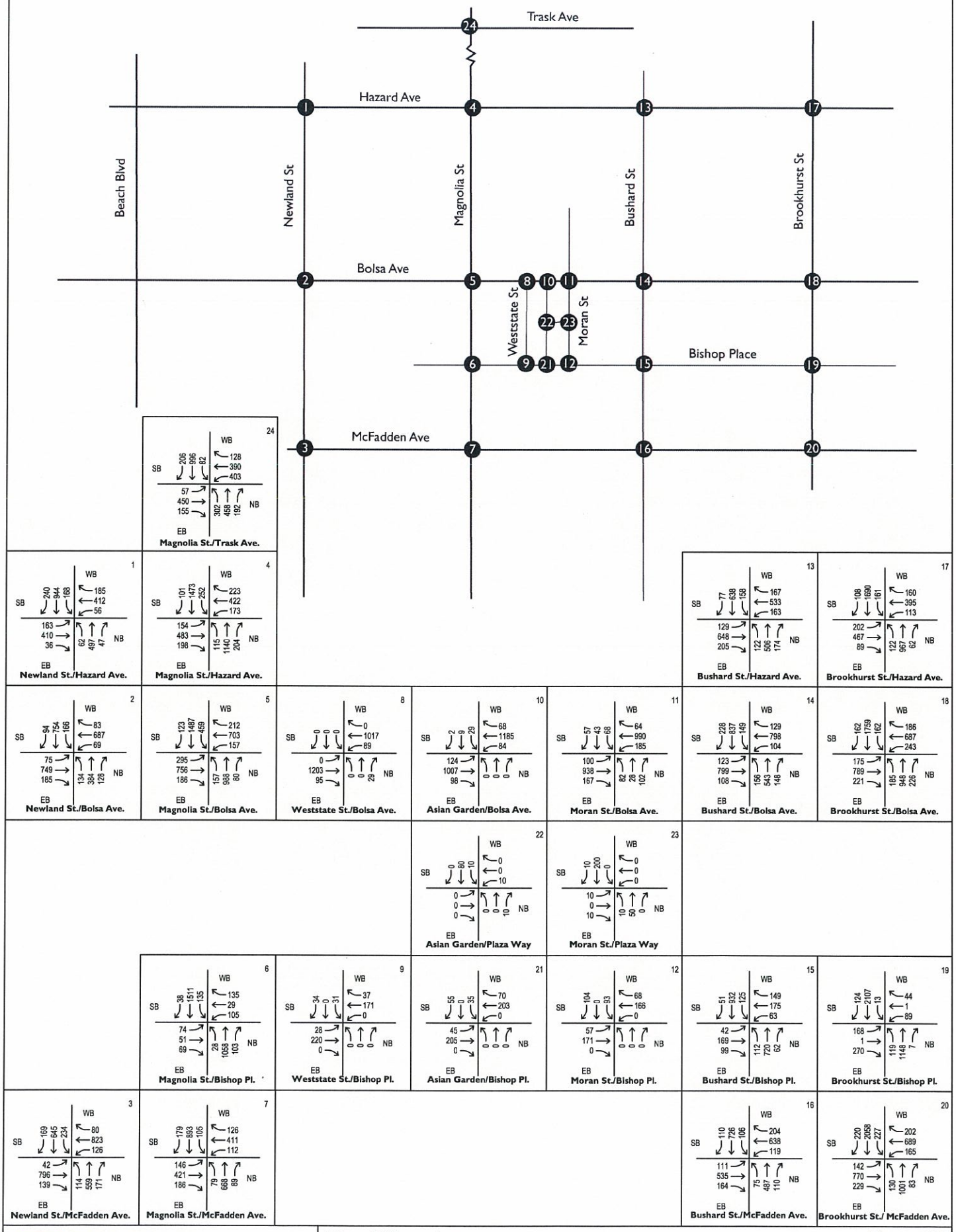

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Figure 13.2

Little Saigon Traffic & Parking Study

Buildout Traffic Volumes with Project, Scenario 5 Weekday AM Peak Hour

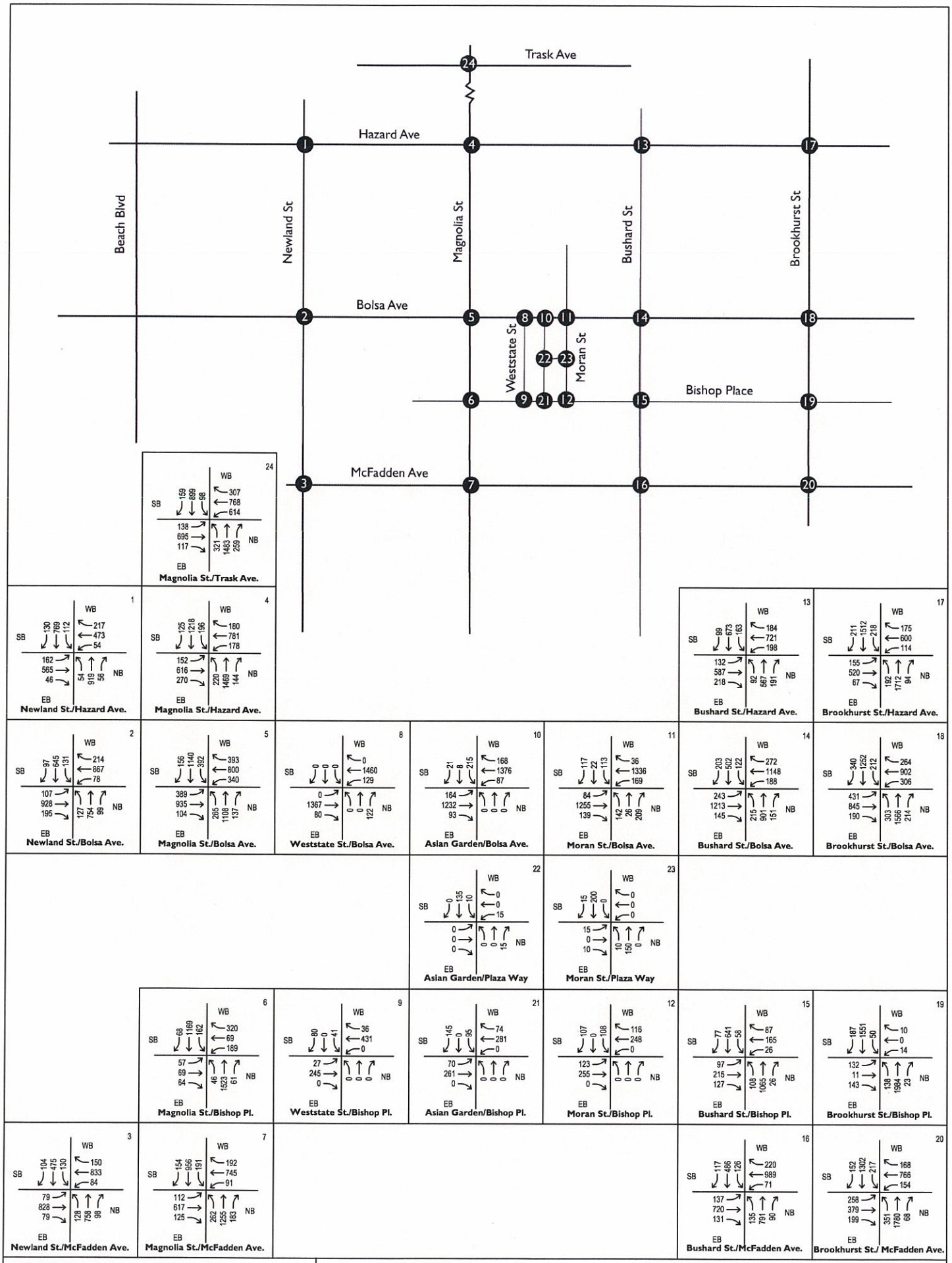

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Figure 13.3

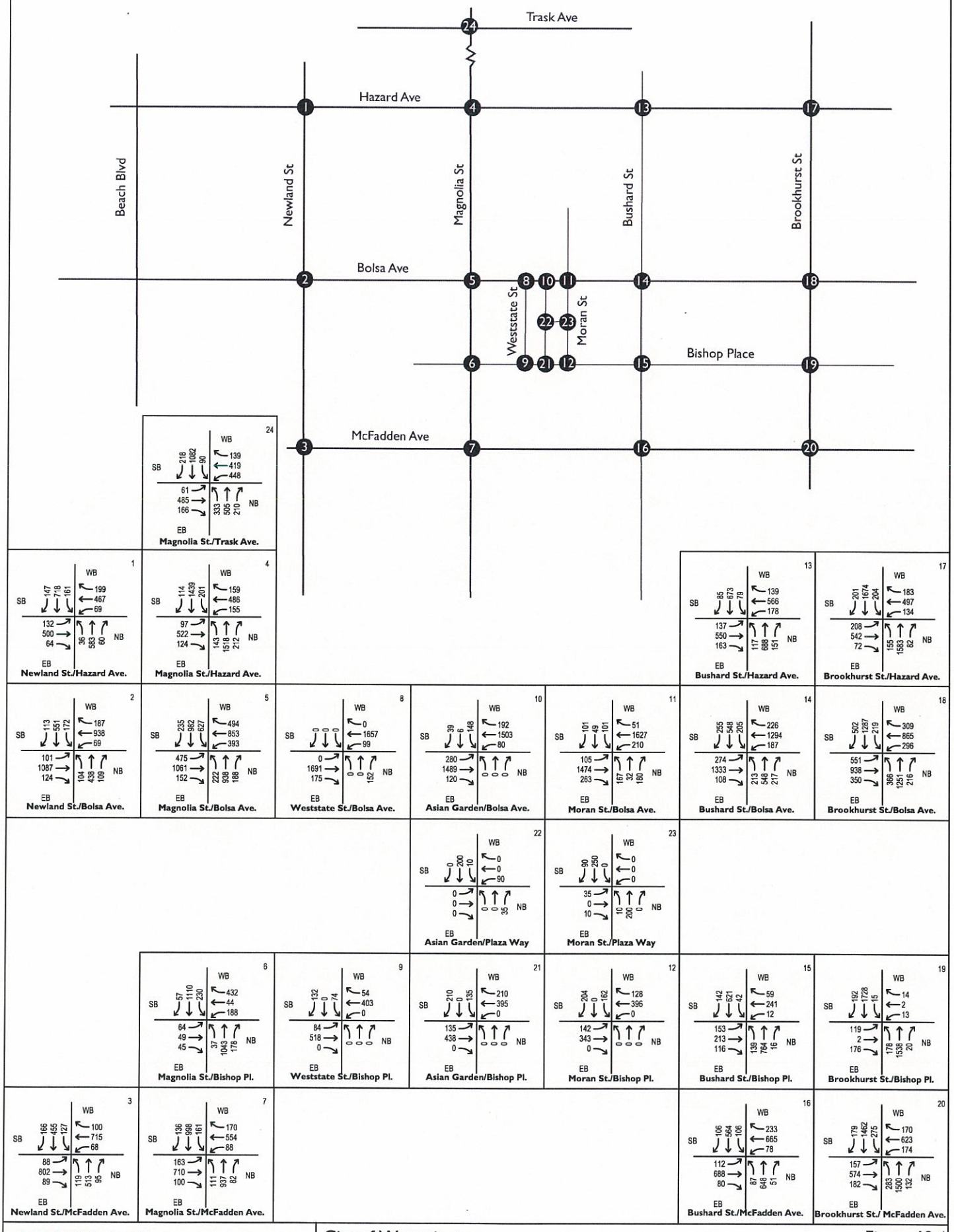
Little Saigon Traffic & Parking Study

Buildout Traffic Volumes with Project, Scenario 5 Weekday PM Peak Hour

Table 13.1
Peak Hour Intersection Conditions
Year 2030 Buildout With Project Scenario 5 Weekday

	Intersection	AM Peak Hour		PM Peak Hour	
		Volume/ Capacity or Delay	Level Of Service	Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)					
1	Newland Street at Hazard Avenue	.767	C	.735	C
2	Newland Street at Bolsa Avenue	.665	B	.745	C
3	Newland Street at McFadden Avenue	.914	E	.880	D
4	Magnolia Street at Hazard Avenue	.944	E	1.013	F
5	Magnolia Street at Bolsa Avenue	1.032	F	1.094	F
6	Magnolia Street at Bishop Place	.654	B	.870	D
7	Magnolia Street at McFadden Avenue	.582	A	.838	D
10	Asian Garden at Bolsa Avenue	.356	A	.532	A
11	Moran Street at Bolsa Avenue	.522	A	.666	B
13	Bushard Street at Hazard Avenue	.758	C	.751	C
14	Bushard Street at Bolsa Avenue	.742	C	.862	D
15	Bushard Street at Bishop Place	.702	C	.760	C
16	Bushard Street at McFadden Avenue	.697	B	.875	D
17	Brookhurst Street at Hazard Avenue	.801	D	.894	D
18	Brookhurst Street at Bolsa Avenue	.769	C	.816	D
19	Brookhurst Street at Bishop Place	.797	C	.601	B
20	Brookhurst Street at McFadden Ave	.988	E	1.035	F
21	Asian Garden at Bishop Place	.228	A	.342	A
24	Magnolia Street at Trask Avenue	.869	D	.961	E
Unsignalized Intersections (Delay, LOS)					
8	Weststate Street at Bolsa Avenue	15.3	C	17.6	C
9	Weststate Street at Bishop Place	11.4	B	16.0	C
12	Moran Street at Bishop Place	9.5	A	12.1	B

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections



KOA CORPORATION
PLANNING & ENGINEERING

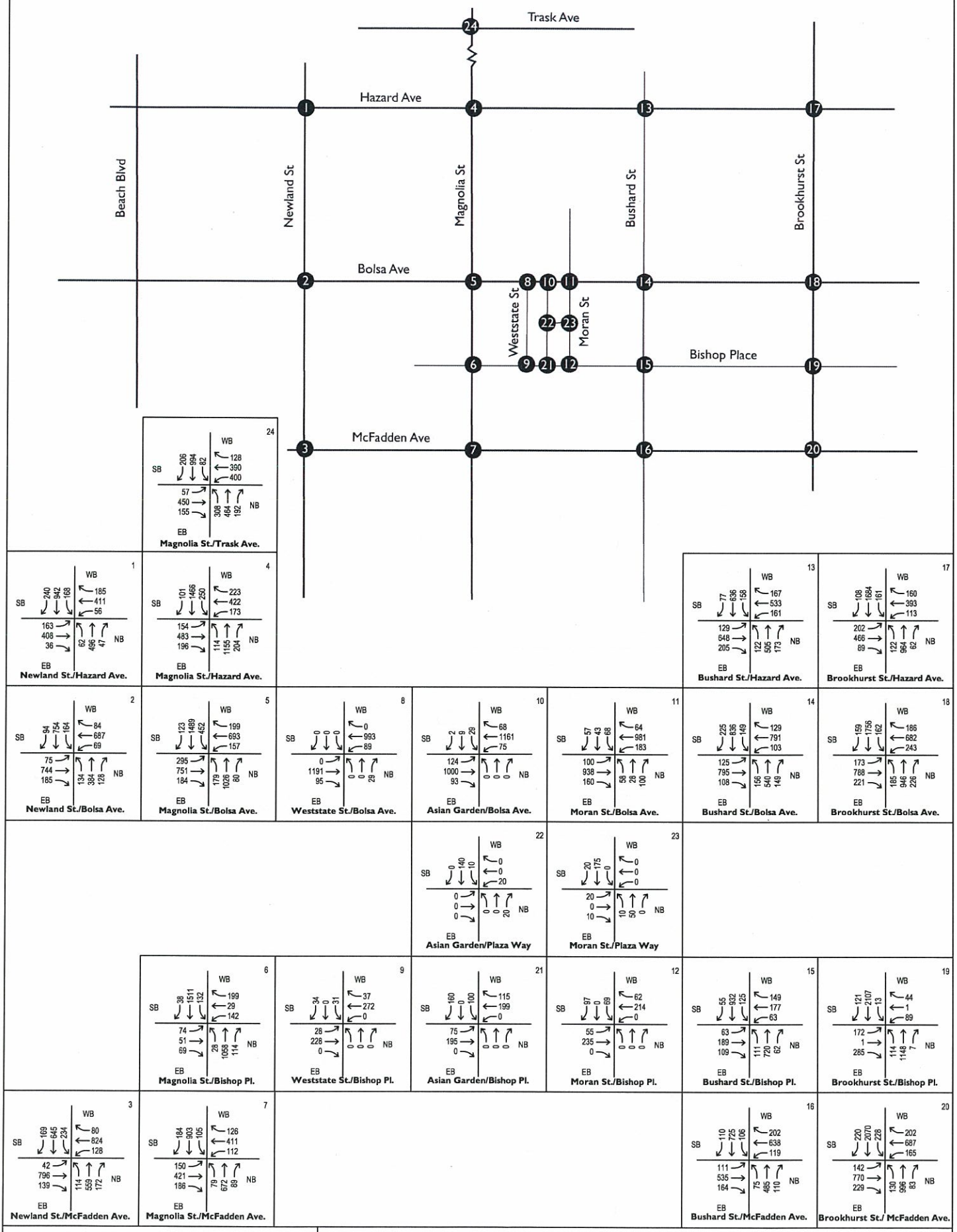
City of Westminster — Figure 13.4

Little Saigon Traffic & Parking Study — Buildout Traffic Volumes with Project, Scenario 5 Weekend (Saturday MD) Peak Hour

Table 13.2
Peak Hour Intersection Conditions
Year 2030 Buildout With Project Scenario 5 Weekend

Intersection		Saturday Midday Peak Hour	
		Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)			
1	Newland Street at Hazard Avenue	.702	C
2	Newland Street at Bolsa Avenue	.723	C
3	Newland Street at McFadden Avenue	.759	C
4	Magnolia Street at Hazard Avenue	.912	E
5	Magnolia Street at Bolsa Avenue	1.121	F
6	Magnolia Street at Bishop Place	.795	C
7	Magnolia Street at McFadden	.654	B
10	Asian Garden at Bolsa Avenue	.583	A
11	Moran Street at Bolsa Avenue	.736	C
13	Bushard Street at Hazard Avenue	.750	C
14	Bushard Street at Bolsa Avenue	.858	D
15	Bushard Street at Bishop Place	.670	B
16	Bushard Street at McFadden Avenue	.652	B
17	Brookhurst Street at Hazard Avenue	.860	D
18	Brookhurst Street at Bolsa Avenue	.791	C
19	Brookhurst Street at Bishop Place	.639	B
20	Brookhurst Street at McFadden Ave	.882	D
21	Asian Garden at Bishop Place	.520	A
24	Magnolia Street at Trask Avenue	.943	E
Unsignalized Intersections (Delay, LOS)			
8	Weststate Street at Bolsa Avenue	25.6	D
9	Weststate Street at Bishop Place	36.3	E
12	Moran Street at Bishop Place	16.4	C

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections



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City of Westminster

Figure 13.5

Little Saigon Traffic & Parking Study

Buildout Traffic Volumes with Project, Scenario 6 Weekday AM Peak Hour

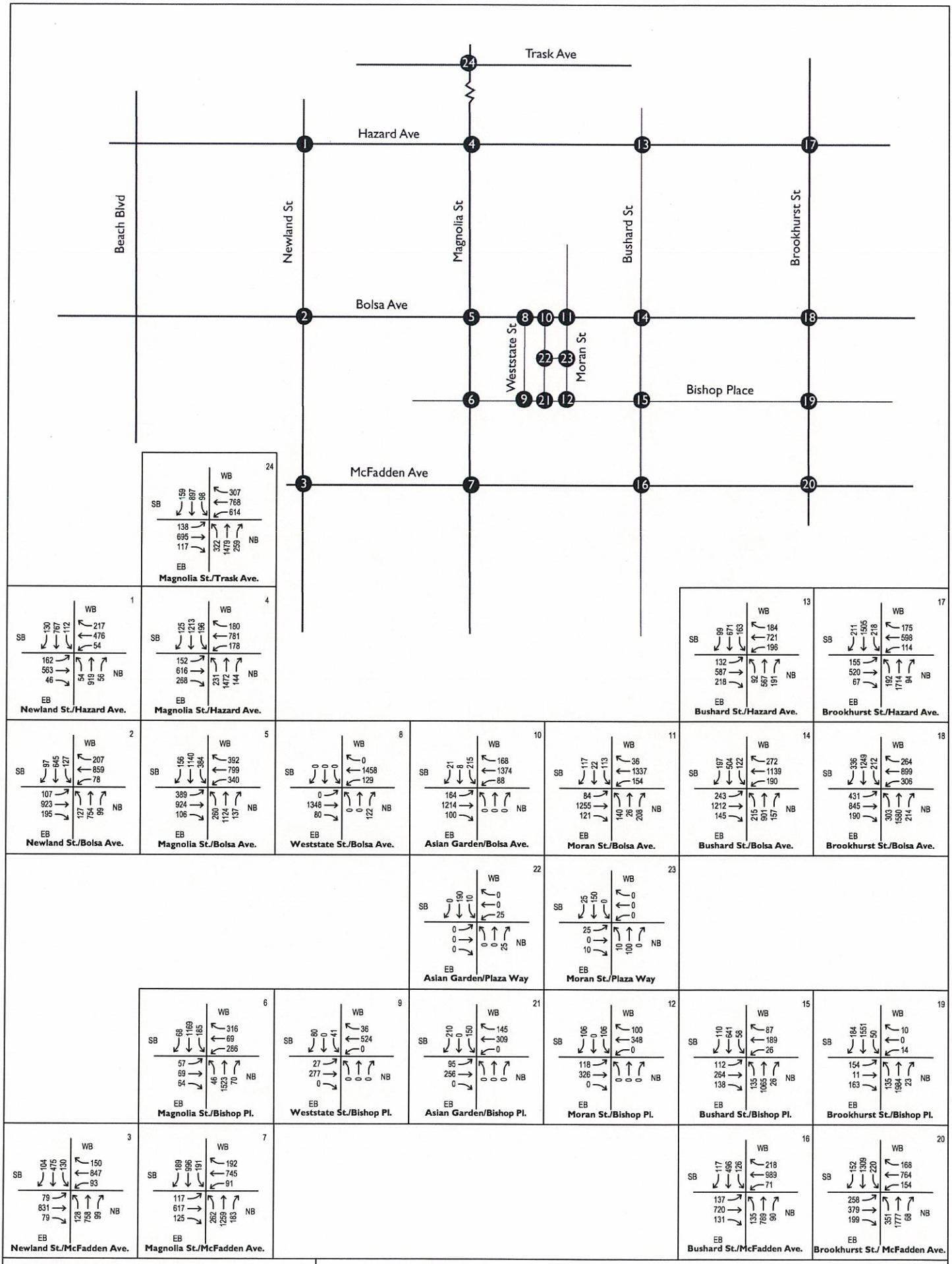

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Figure 13.6

Little Saigon Traffic & Parking Study

Buildout Traffic Volumes with Project, Scenario 6 Weekday PM Peak Hour

Table 13.3
Peak Hour Intersection Conditions
Year 2030 Buildout With Project Scenario 6 Weekday

	Intersection	AM Peak Hour		PM Peak Hour	
		Volume/ Capacity or Delay	Level Of Service	Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)					
1	Newland Street at Hazard Avenue	.766	C	.736	C
2	Newland Street at Bolsa Avenue	.663	B	.740	C
3	Newland Street at McFadden Avenue	.915	E	.884	D
4	Magnolia Street at Hazard Avenue	.940	E	1.018	F
5	Magnolia Street at Bolsa Avenue	1.039	F	1.097	F
6	Magnolia Street at Bishop Place	.676	B	.948	E
7	Magnolia Street at McFadden Avenue	.588	A	.842	D
10	Asian Garden at Bolsa Avenue	.354	A	.531	A
11	Moran Street at Bolsa Avenue	.518	A	.652	B
13	Bushard Street at Hazard Avenue	.756	C	.750	C
14	Bushard Street at Bolsa Avenue	.739	C	.865	D
15	Bushard Street at Bishop Place	.717	C	.808	D
16	Bushard Street at McFadden Avenue	.696	B	.873	D
17	Brookhurst Street at Hazard Avenue	.800	C	.894	D
18	Brookhurst Street at Bolsa Avenue	.768	C	.818	D
19	Brookhurst Street at Bishop Place	.803	D	.607	B
20	Brookhurst Street at McFadden Ave	.991	E	1.035	F
21	Asian Garden at Bishop Place	.331	A	.473	A
24	Magnolia Street at Trask Avenue	.871	D	.961	E
Unsignalized Intersections (Delay, LOS)					
8	Weststate Street at Bolsa Avenue	15.2	C	17.3	C
9	Weststate Street at Bishop Place	12.7	B	19.0	C
12	Moran Street at Bishop Place	10.0	B	14.8	B

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

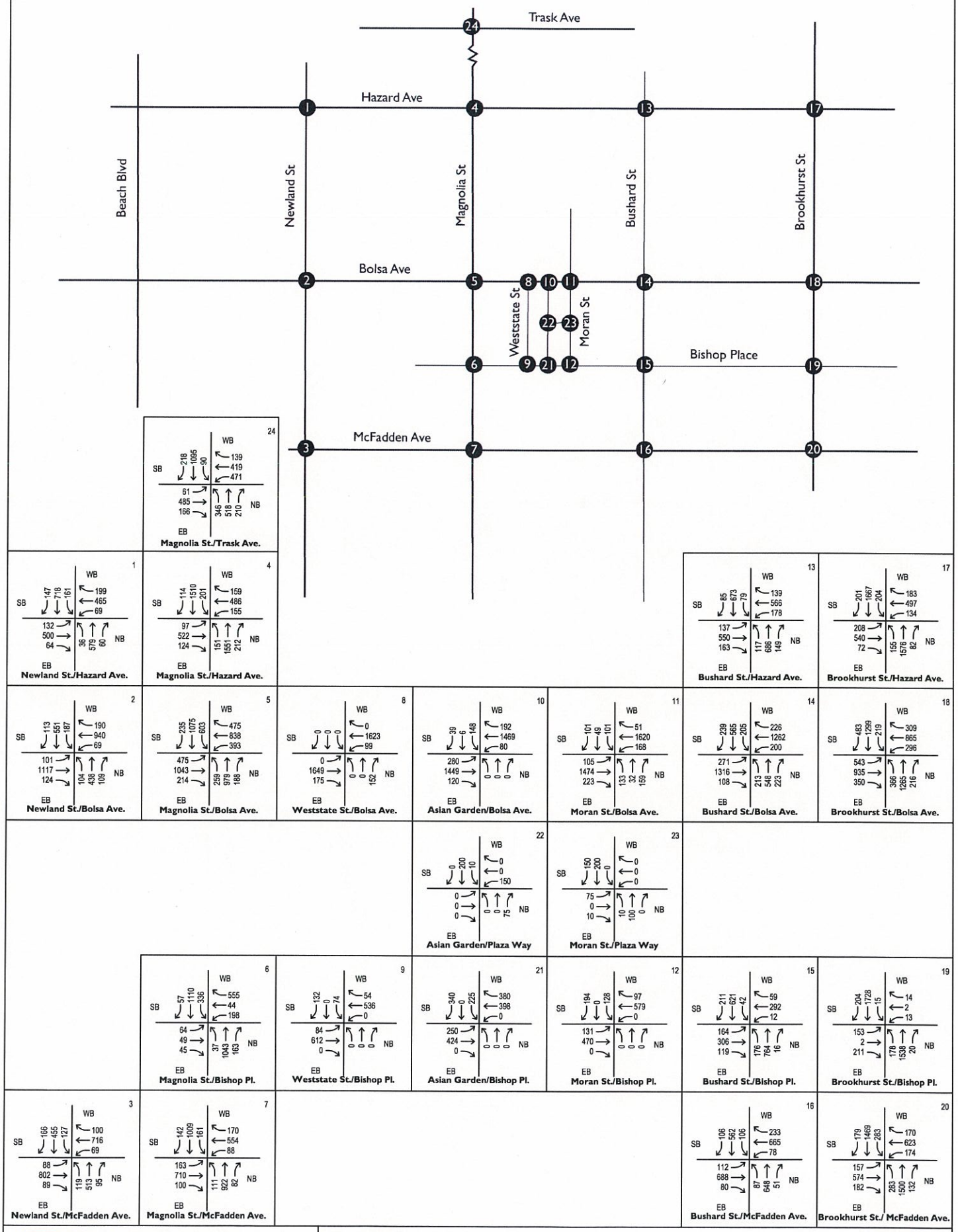

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Figure 13.7

Little Saigon Traffic & Parking Study

Buildout Traffic Volumes with Project, Scenario 6 Weekend (Saturday MD) Peak Hour

Table 13.4 -
Peak Hour Intersection Conditions
Year 2030 Buildout With Project, Scenario 6 Weekend

Intersection		Saturday Midday Peak Hour	
		Volume/ Capacity or Delay	Level Of Service
Signalized Intersections (V/C, LOS)			
1	Newland Street at Hazard Avenue	.700	B
2	Newland Street at Bolsa Avenue	.742	C
3	Newland Street at McFadden Avenue	.771	C
4	Magnolia Street at Hazard Avenue	.939	E
5	Magnolia Street at Bolsa Avenue	1.147	F
6	Magnolia Street at Bishop Place	.934	E
7	Magnolia Street at McFadden Avenue	.651	B
10	Asian Garden at Bolsa Avenue	.576	A
11	Moran Street at Bolsa Avenue	.681	B
13	Bushard Street at Hazard Avenue	.750	C
14	Bushard Street at Bolsa Avenue	.850	D
15	Bushard Street at Bishop Place	.780	C
16	Bushard Street at McFadden Avenue	.652	B
17	Brookhurst Street at Hazard Avenue	.859	D
18	Brookhurst Street at Bolsa Avenue	.788	C
19	Brookhurst Street at Bishop Place	.662	B
20	Brookhurst Street at McFadden Avenue	.887	D
21	Asian Garden at Bishop Place	.689	B
24	Magnolia Street at Trask Avenue	.961	E
Unsignalized Intersections (Delay, LOS)			
8	Weststate Street at Bolsa Avenue	24.3	C
9	Weststate Street at Bishop Place	46.5	E
12	Moran Street at Bishop Place	23.3	C

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

14. Determination of Significant Impact

Traffic impacts are identified if the proposed project will result in a significant change in traffic conditions on a roadway or at an intersection. A significant impact is normally defined when project related traffic would cause level of service to deteriorate to below the minimum acceptable level by a measurable amount. Impacts may also be significant if the location is already below the minimum acceptable level and project related traffic causes a further significant decline.

The City of Westminster has identified Level of Service D as the minimum allowable service level during peak hours at signalized intersections in the City. Most arriving traffic will clear the intersection on the first allowable green cycle under this level of service. Mitigation measures should be considered when traffic conditions are forecast to decline to poorer levels of service. City intersections require an impact from project trips of 1% or more of Intersection Capacity Utilization (ICU) to have a significant impact. CMP intersections require an increase in ICU of 3% or more due to project trips to have a significant impact.

14.1 Study Area Intersections

The level of service analyses for Scenario 5 in 2030 determined that Level of service will remain at Level D or better for 16 of the 22 study intersections. Six of the study intersections were determined to be operating deficiently. Tables 14.1 and 14.2 provide a comparison of the levels of service for Scenario 5 in the Weekday AM and PM peak hours. Table 14.3 provides a comparison of the levels of service for Scenario 5 in the Weekend Mid-day peak hour. Traffic impacts created by the project can be evaluated by comparing the "Buildout Without Project" condition to the "Buildout With Project" condition for Scenario 5.

The Buildout Without Project condition is the ambient growth, or "background" traffic for Year 2030, in that it includes ambient traffic growth but does not include project traffic. It is developed from the OCTAM Year 2030 traffic model and existing traffic counts. The Buildout With Project condition includes both the "background" traffic developed from the OCTAM Year 2030 traffic model and adds the project traffic to derive the total "With Project" traffic for Year 2030.

Tables 14.4, 14.5, and 14.6 provide comparisons of the levels of service for the Weekday AM and PM, and Weekend Mid-day peak hours, for buildout with and without the project under Scenario 6. Tables 14.4 – 14.6 show similar results for Scenario 6.

Table 14.1 - Impacts for Year 2030 Buildout Conditions
Weekday AM Peak Hour, Scenario 5

	Intersection	Existing Conditions	Buildout Without Project	Buildout With Project	Increase/ Decrease	Significant Impact?
Signalized Intersections (LOS / V/C)						
1	Newland Street at Hazard Avenue	A/.599	C/.761	C/0.767	0.006	No
2	Newland Street at Bolsa Avenue	A/.553	B/.646	B/0.665	0.019	No
3	Newland Street at McFadden Ave	B/.684	E/.910	E/0.914	0.004	No
4	Magnolia Street at Hazard Avenue	C/.791	E/.920	E/0.944	0.024	Yes
5	Magnolia Street at Bolsa Avenue	D/.848	F/1.013	F/1.032	0.019	Yes
6	Magnolia Street at Bishop Place	A/.528	B/.604	B/0.654	0.050	No
7	Magnolia Street at McFadden Ave	A/.487	A/.570	A/0.582	0.012	No
10	Asian Garden at Bolsa Avenue	A/.322	A/.357	A/0.356	-0.001	No
11	Moran Street at Bolsa Avenue	A/.383	A/.488	A/0.522	0.034	No
13	Bushard Street at Hazard Avenue	B/.636	C/.746	C/0.758	0.012	No
14	Bushard Street at Bolsa Avenue	A/.598	C/.723	C/0.742	0.019	No
15	Bushard Street at Bishop Place	A/.558	B/.644	C/0.702	0.058	No
16	Bushard Street at McFadden Ave	A/.553	B/.691	B/0.697	0.006	No
17	Brookhurst Street at Hazard Avenue	B/.679	C/.790	D/0.801	0.011	No
18	Brookhurst Street at Bolsa Avenue	B/.650	C/.762	C/0.769	0.007	No
19	Brookhurst Street at Bishop Place	B/.690	C/.764	C/0.797	0.033	No
20	Brookhurst Street at McFadden Ave	D/.889	E/.986	E/0.988	0.002	No
21	Asian Garden at Bishop Place	NA	NA	A/0.228	NA	No
24	Magnolia Street at Trask Avenue	C/.732	D/.857	D/0.869	0.012	No
Unsignalized Intersections (LOS / Delay)						
8	Weststate Street at Bolsa Avenue	B/13.1	B/14.6	C/15.3	0.7	No
9	Weststate Street at Bishop Place	B/10.2	B/10.5	B/11.4	0.9	No
12	Moran Street at Bishop Place	B/10.1	B/11.5	A/9.5	-2.0	No

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

Table 14.2 - Impacts for Year 2030 Buildout Conditions
Weekday PM Peak Hour, Scenario 5

	Intersection	Existing Conditions	Buildout Without Project	Buildout With Project	Increase/ Decrease	Significant Impact?
Signalized Intersections (LOS / V/C)						
1	Newland Street at Hazard Avenue	A/.584	C/.733	C/0.735	0.002	No
2	Newland Street at Bolsa Avenue	B/.652	C/.728	C/0.745	0.017	No
3	Newland Street at McFadden Ave	C/.779	D/.878	D/0.880	0.002	No
4	Magnolia Street at Hazard Avenue	D/.856	E/.992	F/1.013	0.021	Yes
5	Magnolia Street at Bolsa Avenue	E/.930	F/1.069	F/1.094	0.025	Yes
6	Magnolia Street at Bishop Place	C/.727	D/.818	D/0.870	0.052	No
7	Magnolia Street at McFadden Ave	C/.722	D/.830	D/0.838	0.008	No
10	Asian Garden at Bolsa Avenue	A/.494	A/.544	A/0.532	-0.012	No
11	Moran Street at Bolsa Avenue	A/.535	B/.613	B/0.666	0.053	No
13	Bushard Street at Hazard Avenue	B/.631	C/.739	C/0.751	0.012	No
14	Bushard Street at Bolsa Avenue	C/.742	D/.845	D/0.862	0.017	No
15	Bushard Street at Bishop Place	B/.610	C/.703	C/0.760	0.057	No
16	Bushard Street at McFadden Ave	C/.737	D/.863	D/0.875	0.012	No
17	Brookhurst Street at Hazard Avenue	C/.764	D/.885	D/0.894	0.009	No
18	Brookhurst Street at Bolsa Avenue	C/.722	D/.804	D/0.816	0.012	No
19	Brookhurst Street at Bishop Place	A/.524	A/.580	B/0.601	0.021	No
20	Brookhurst Street at McFadden Ave	D/.891	F/1.017	F/1.035	0.018	Yes
21	Asian Garden at Bishop Place	NA	NA	A/0.342	NA	No
24	Magnolia Street at Trask Avenue	D/.863	E/.950	E/0.961	0.011	Yes
Unsignalized Intersections (LOS / Delay)						
8	Weststate Street at Bolsa Avenue	B/14.0	C/16.5	C/17.6	1.1	No
9	Weststate Street at Bishop Place	B/12.6	B/13.5	C/16	2.5	No
12	Moran Street at Bishop Place	C/15.9	C/19.4	B/12.1	-7.3	No

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

Table 14.3 - Impacts for Year 2030 Buildout Conditions
Weekend Mid-Day Peak Hour, Scenario 5

	Intersection	Existing Conditions	Buildout Without Project	Buildout With Project	Increase/ Decrease	Significant Impact?
Signalized Intersections (LOS / V/C)						
1	Newland Street at Hazard Avenue	A/.527	B/.691	C/0.702	0.011	No
2	Newland Street at Bolsa Avenue	B/.604	C/.704	C/0.723	0.019	No
3	Newland Street at McFadden Ave	B/.662	C/.757	C/0.759	0.002	No
4	Magnolia Street at Hazard Avenue	B/.688	D/.878	E/0.912	0.034	Yes
5	Magnolia Street at Bolsa Avenue	D/.868	F/1.083	F/1.121	0.038	Yes
6	Magnolia Street at Bishop Place	B/.619	C/.703	C/0.795	0.092	No
7	Magnolia Street at McFadden	A/.553	B/.626	B/0.654	0.028	No
10	Asian Garden at Bolsa Avenue	A/.548	B/.608	A/0.583	-0.025	No
11	Moran Street at Bolsa Avenue	A/.558	B/.662	C/0.736	0.074	No
13	Bushard Street at Hazard Avenue	B/.612	C/.714	C/0.750	0.036	No
14	Bushard Street at Bolsa Avenue	C/.709	D/.824	D/0.858	0.034	No
15	Bushard Street at Bishop Place	A/.478	A/.572	B/0.670	0.098	No
16	Bushard Street at McFadden Ave	A/.513	B/.631	B/0.652	0.021	No
17	Brookhurst Street at Hazard Avenue	C/.725	D/.830	D/0.860	0.030	No
18	Brookhurst Street at Bolsa Avenue	B/.694	C/.774	C/0.791	0.017	No
19	Brookhurst Street at Bishop Place	A/.493	A/.573	B/0.639	0.066	No
20	Brookhurst Street at McFadden Ave	C/.750	D/.860	D/0.882	0.022	No
21	Asian Garden at Bishop Place	NA	NA	A/0.520	NA	No
24	Magnolia Street at Trask Avenue	C/.794	E/.921	E/0.943	0.022	Yes
Unsignalized Intersections (LOS / Delay)						
8	Weststate Street at Bolsa Avenue	C/18.8	C/23.6	D/25.6	2.0	No
9	Weststate Street at Bishop Place	C/16.9	C/20.1	E/36.3	16.2	Yes
12	Moran Street at Bishop Place	C/17.8	D/32.5	C/16.4	-16.1	No

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

Table 14.4 - Impacts for Year 2030 Buildout Conditions
Weekday AM Peak Hour, Scenario 6

	Intersection	Existing Conditions	Buildout Without Project	Buildout With Project	Increase/ Decrease	Significant Impact?
Signalized Intersections (LOS / V/C)						
1	Newland Street at Hazard Avenue	A/.599	C/.761	C/0.766	0.005	No
2	Newland Street at Bolsa Avenue	A/.553	B/.646	B/0.663	0.017	No
3	Newland Street at McFadden Ave	B/.684	E/.910	E/0.915	0.005	No
4	Magnolia Street at Hazard Avenue	C/.791	E/.920	E/0.940	0.020	Yes
5	Magnolia Street at Bolsa Avenue	D/.848	F/1.013	F/1.039	0.026	Yes
6	Magnolia Street at Bishop Place	A/.528	B/.604	B/0.676	0.072	No
7	Magnolia Street at McFadden	A/.487	A/.570	A/0.588	0.018	No
10	Asian Garden at Bolsa Avenue	A/.322	A/.357	A/0.354	-0.003	No
11	Moran Street at Bolsa Avenue	A/.383	A/.488	A/0.518	0.030	No
13	Bushard Street at Hazard Avenue	B/.636	C/.746	C/0.756	0.010	No
14	Bushard Street at Bolsa Avenue	A/.598	C/.723	C/0.739	0.016	No
15	Bushard Street at Bishop Place	A/.558	B/.644	C/0.717	0.073	No
16	Bushard Street at McFadden Ave	A/.553	B/.691	B/0.696	0.005	No
17	Brookhurst Street at Hazard Avenue	B/.679	C/.790	C/0.800	0.010	No
18	Brookhurst Street at Bolsa Avenue	B/.650	C/.762	C/0.768	0.006	No
19	Brookhurst Street at Bishop Place	B/.690	C/.764	D/0.803	0.039	No
20	Brookhurst Street at McFadden Ave	D/.889	E/.986	E/0.991	0.005	No
21	Asian Garden at Bishop Place	NA	NA	A/0.331	NA	No
24	Magnolia Street at Trask Avenue	C/.732	D/.857	D/0.871	0.014	No
Unsignalized Intersections (LOS / Delay)						
8	Weststate Street at Bolsa Avenue	B/13.1	B/14.6	C/15.2	0.6	No
9	Weststate Street at Bishop Place	B/10.2	B/10.5	B/12.7	2.2	No
12	Moran Street at Bishop Place	B/10.1	B/11.5	B/10	-1.5	No

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

Table 14.5 - Impacts for Year 2030 Buildout Conditions
Weekday PM Peak Hour, Scenario 6

	Intersection	Existing Conditions	Buildout Without Project	Buildout With Project	Increase/ Decrease	Significant Impact?
Signalized Intersections (LOS / V/C)						
1	Newland Street at Hazard Avenue	A/.584	C/.733	C/0.736	0.003	No
2	Newland Street at Bolsa Avenue	B/.652	C/.728	C/0.74	0.012	No
3	Newland Street at McFadden Ave	C/.779	D/.878	D/0.884	0.006	No
4	Magnolia Street at Hazard Avenue	D/.856	E/.992	F/1.018	0.026	Yes
5	Magnolia Street at Bolsa Avenue	E/.930	F/1.069	F/1.097	0.028	Yes
6	Magnolia Street at Bishop Place	C/.727	D/.818	E/0.948	0.130	Yes
7	Magnolia Street at McFadden Ave	C/.722	D/.830	D/0.842	0.012	No
10	Asian Garden at Bolsa Avenue	A/.494	A/.544	A/0.531	-0.013	No
11	Moran Street at Bolsa Avenue	A/.535	B/.613	B/0.652	0.039	No
13	Bushard Street at Hazard Avenue	B/.631	C/.739	C/0.750	0.011	No
14	Bushard Street at Bolsa Avenue	C/.742	D/.845	D/0.865	0.020	No
15	Bushard Street at Bishop Place	B/.610	C/.703	D/0.808	0.105	No
16	Bushard Street at McFadden Ave	C/.737	D/.863	D/0.873	0.010	No
17	Brookhurst Street at Hazard Ave	C/.764	D/.885	D/0.894	0.009	No
18	Brookhurst Street at Bolsa Avenue	C/.722	D/.804	D/0.818	0.014	No
19	Brookhurst Street at Bishop Place	A/.524	A/.580	B/0.607	0.027	No
20	Brookhurst Street at McFadden Ave	D/.891	F/1.017	F/1.035	0.018	Yes
21	Asian Garden at Bishop Place	NA	NA	A/0.473	NA	No
24	Magnolia Street at Trask Avenue	D/.863	E/.950	E/0.961	0.011	Yes
Unsignalized Intersections (LOS / Delay)						
8	Weststate Street at Bolsa Avenue	B/14.0	C/16.5	C/17.3	0.8	No
9	Weststate Street at Bishop Place	B/12.6	B/13.5	C/19.0	5.5	No
12	Moran Street at Bishop Place	C/15.9	C/19.4	B/14.8	-4.6	No

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

Table 14.6 - Impacts for Year 2030 Buildout Conditions
Weekend Mid-Day Peak Hour, Scenario 6

	Intersection	Existing Conditions	Buildout Without Project	Buildout With Project	Increase/ Decrease	Significant Impact?
Signalized Intersections (LOS / V/C)						
1	Newland Street at Hazard Avenue	A/.527	B/.691	B/0.700	0.009	No
2	Newland Street at Bolsa Avenue	B/.604	C/.704	C/0.742	0.038	No
3	Newland Street at McFadden Avenue	B/.662	C/.757	C/0.771	0.014	No
4	Magnolia Street at Hazard Avenue	B/.688	D/.878	E/0.939	0.061	Yes
5	Magnolia Street at Bolsa Avenue	D/.868	F/1.083	F/1.147	0.064	Yes
6	Magnolia Street at Bishop Place	B/.619	C/.703	E/0.934	0.231	Yes
7	Magnolia Street at McFadden Ave	A/.553	B/.626	B/0.651	0.025	No
10	Asian Garden at Bolsa Avenue	A/.548	B/.608	A/0.576	-0.032	No
11	Moran Street at Bolsa Avenue	A/.558	B/.662	B/0.681	0.019	No
13	Bushard Street at Hazard Avenue	B/.612	C/.714	C/0.750	0.036	No
14	Bushard Street at Bolsa Avenue	C/.709	D/.824	D/0.850	0.026	No
15	Bushard Street at Bishop Place	A/.478	A/.572	C/0.780	0.208	No
16	Bushard Street at McFadden Ave	A/.513	B/.631	B/0.652	0.021	No
17	Brookhurst Street at Hazard Avenue	C/.725	D/.830	D/0.859	0.029	No
18	Brookhurst Street at Bolsa Avenue	B/.694	C/.774	C/0.788	0.014	No
19	Brookhurst Street at Bishop Place	A/.493	A/.573	B/0.662	0.089	No
20	Brookhurst Street at McFadden Ave	C/.750	D/.860	D/0.887	0.027	No
21	Asian Garden at Bishop Place	NA	NA	B/0.689	NA	No
24	Magnolia Street at Trask Avenue	C/.794	E/.921	E/0.961	0.040	Yes
Unsignalized Intersections (LOS / Delay)						
8	Weststate Street at Bolsa Avenue	C/18.8	C/23.6	C/24.3	0.7	No
9	Weststate Street at Bishop Place	C/16.9	C/20.1	E/46.5	26.4	Yes
12	Moran Street at Bishop Place	C/17.8	D/32.5	C/23.3	-9.2	No

Note 1: Volume/Capacity shown for signalized intersections; Average delay shown for unsignalized intersections

The project will contribute to unacceptable levels of service at six intersections evaluated under Scenario 5 and Scenario 6 as follows:

Impacted Intersections, Scenario 5 and Scenario 6

- Magnolia Street /Trask Avenue
- Magnolia Street /Hazard Avenue
- Magnolia Street /Bolsa Avenue
- Magnolia Street/Bishop Place
- Weststate Street/Bishop Place
- Brookhurst Street/McFadden Avenue

Recommended mitigation measures to improve the deficient conditions are discussed in the section on Mitigation and Recommendations.

14.2 CMP Intersections and Street Segments

An evaluation of the potential impact of project traffic on Orange County CMP Intersections was conducted to determine if there were any project impacts to these intersections. Although the project is expected to generate more than 2,400 net daily trips, the project is not expected to contribute 3% or more to existing capacity at any CMP Intersection. The project is adjacent to a CMP link, however (Bolsa Avenue), therefore a daily level of service analysis for Bolsa Avenue was performed to determine if the project will have a significant impact on this CMP roadway. Table 14.7 summarizes the results of this analysis.

Table 14.7 – CMP Street Segment Analysis

Daily Traffic Analysis for Bolsa Avenue (Weekend)

	ADT	#of Exist Lanes	Per Lane Capacity	LOS E Capacity	V/C Ratio	LOS
Existing	34,270	6D	9,300	56,300	0.61	B
2030 w/o Project	41,980	6D	9,300	56,300	0.75	C
Project Only	1670	N/A	N/A	N/A	N/A	N/A
2030 w/ Project	43,650	6D	9,300	56,300	0.78	C

Daily Traffic Analysis for Bolsa Avenue (Weekday)

	ADT	#of Exist Lanes	Per Lane Capacity	LOS E Capacity	V/C Ratio	LOS
Existing	29,730	6D	9,300	56,300	0.53	A
2030 w/o Project	35,660	6D	9,300	56,300	0.63	B
Project Only	930	N/A	N/A	N/A	N/A	N/A
2030 w/ Project	36,590	6D	9,300	56,300	0.65	B

As shown in Table 14.7, Bolsa Avenue in the project vicinity is expected to operate at Level of Service C or better. There are not expected to be any project impacts resulting in a decline in street segment level of service to LOS E or F. Level of service will remain at Level C or better. There are no significant street segment project impacts to Bolsa Avenue.

The discrepancy between street segment level of service and intersection level of service is the result of intersections acting as "chokepoints" in traffic flow. There may be a very long delay at an intersection due to conflicting traffic movements, with little or no delay along the mid-block street segment due to lack of conflicting traffic. This can result in intersection Level of Service E or F, while street segment level of service may be significantly better, such as Level B or C.

15. Mitigation

Mitigation measures are required if approval and construction of the project will result in or significantly increase unacceptable traffic conditions. They are also appropriate if cumulative traffic conditions will result in an unsatisfactory level of service and the proposed development contributes to these conditions significantly. These conditions are expected to occur by Year 2030 (buildout) at six of the intersections in the project study area with background traffic growth and proposed project traffic. The signalized intersections of Magnolia Street/Trask Avenue, Magnolia Street/Hazard Avenue, Magnolia Street/Bolsa Avenue, Magnolia Street/Bishop Place, Weststate Street/Bishop Place, and Brookhurst Street/McFadden Avenue will operate at Level of Service E or worse under Buildout With Project conditions and will have impacts from the proposed project.

The poor expected levels of service, combined with significant increases in traffic volumes indicates that mitigation will be required. It is recommended that mitigation be planned at the following intersections:

Magnolia Street /Trask Avenue

Level of service at Magnolia/Trask under Buildout With Project conditions is expected to be Level E (ICU .961) without intersection improvements. The recommended mitigation at Magnolia/Trask is a southbound right-turn lane. Project impacts will be partially mitigated to Level of Service E (ICU .955) for the weekday PM peak hour, and will be mitigated to better than No Project conditions, Level D (ICU .879), for the weekend peak hour. This improvement has been recently implemented. Figure 15.1 shows the recommended configuration of Magnolia/Trask.

Magnolia Street/Hazard Avenue

Expected level of service at Magnolia/Hazard under Buildout With Project conditions will be Level F (ICU 1.013) without intersection improvements. The recommended mitigation at Magnolia/Hazard is the addition of a third southbound through lane by restriping. Project impacts will be fully mitigated to better than No Project conditions at this intersection (ICU .912) with this improvement. Figure 15.2 shows the recommended configuration of Magnolia/Hazard.

Magnolia Street/Bolsa Avenue

Level of service at Magnolia/Bolsa under Buildout With Project conditions is expected to be Level F (ICU 1.121) without intersection improvements. The recommended mitigation at Magnolia/Bolsa is restriping for two southbound left-turn lanes plus three through lanes, and the conversion of signal timing from split-phase to protected. Project impacts will be fully mitigated to better than No Project conditions at this intersection (ICU .852) with these improvements. Figure 15.3 shows the recommended configuration of Magnolia/Bolsa.

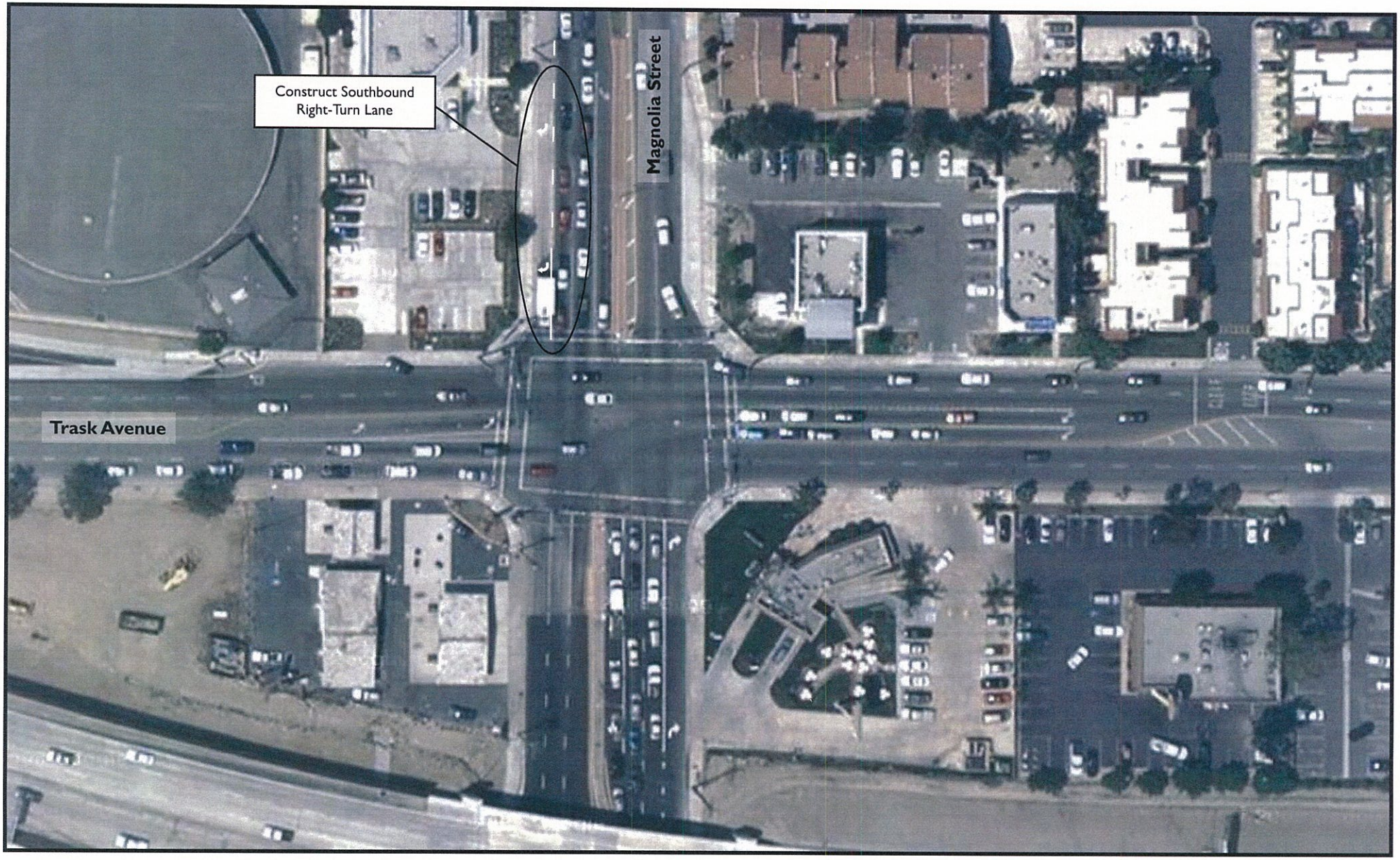

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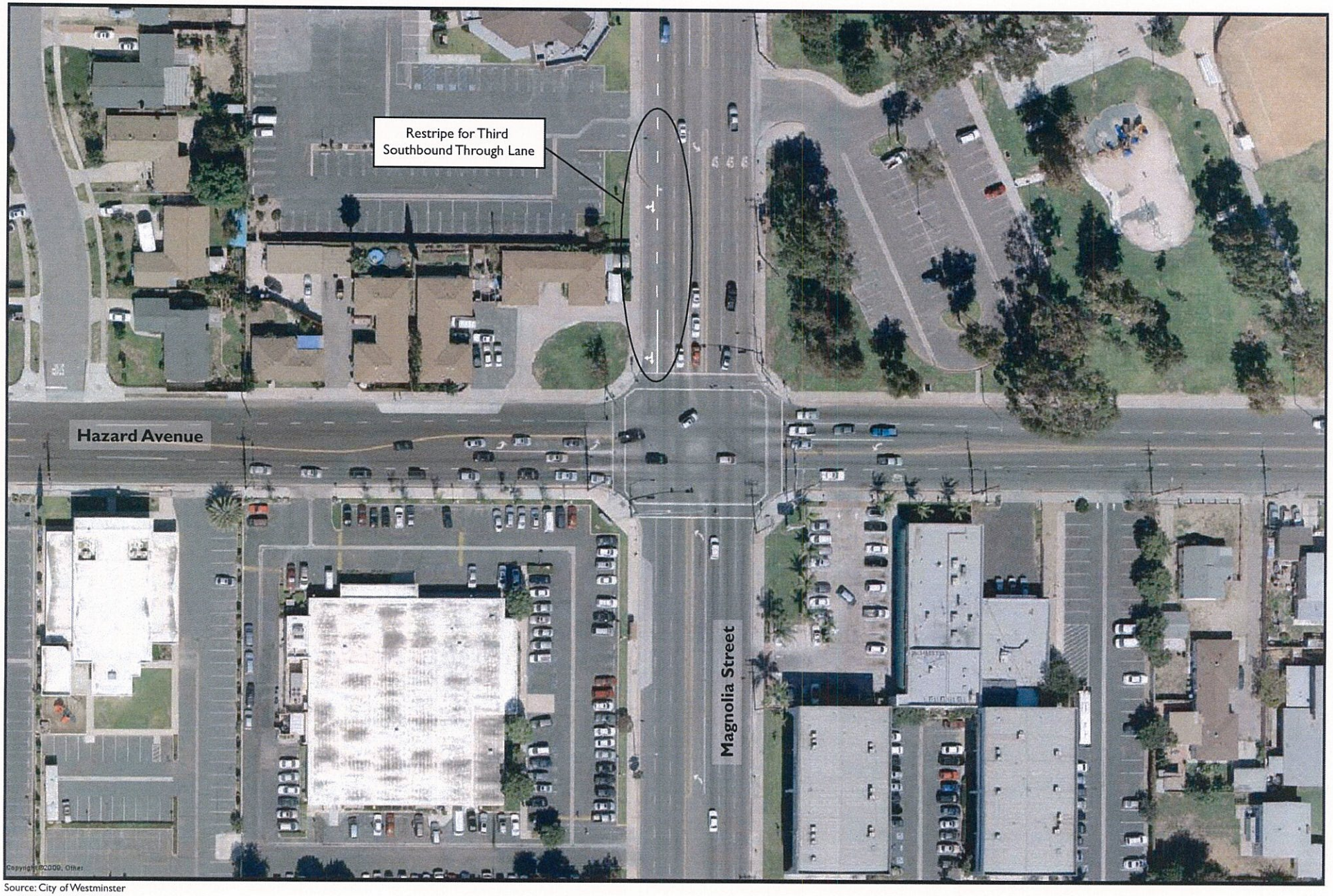
Figure 15.1

Little Saigon Traffic Impact and Parking Study

Magnolia Street/Trask Avenue Recommendations



Source: City of Westminster

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Figure 15.2

Little Saigon Traffic Impact and Parking Study

Magnolia Street/Hazard Avenue Recommendations